

# FLIGHT

The  
AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport  
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 614 (No. 40, Vol. XII.)

SEPTEMBER 30, 1920

Weekly, Price 6d  
Post free, 7d.

## Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2  
Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828

Annual Subscription Rates, Post Free:  
United Kingdom .. 30s. 4d. Abroad.. .. 33s. 0d.\*

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates

\* European subscriptions must be remitted in British currency

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## EDITORIAL COMMENT



THE conclusion of the extremely interesting series of articles in *The Times* on "The Air Raids on England," has given rise to an almost equally interesting discussion on their lessons. Commander Boothby, who was one of the earliest airship pilots in the British service, and who was very closely associated with airship work during the War, reviews in *The Times* the lessons he deduces from the comparative failure of the Zeppelin raids, and very interesting indeed are his conclusions. He points out that when the War began the airships in existence were comparatively small, slow and low-flying, and fine weather was essential to them. Consequently, they preferred anticyclonic weather, with its high barometer and cool temperature, giving the airships their maximum lift, and its light winds, suitable to their low speeds. Incidentally, these weather conditions were also best for our guns, searchlights and aeroplanes to operate in. As the War progressed, the German airships increased in size, ultimately evolving a craft capable of carrying a load of 45 tons, with a static height of 29,000 feet, and a speed of 75 miles an hour. In 1918 the enemy had completed designs for airships of even greater capacity than this, but had failed to make corresponding progress with their mooring arrangements. The result was that, right up to the end of the War, the Germans could only carry out airship raids in fine weather to allow of the ships being taken in and out of their sheds in winds of less velocity than 20 m.p.h.

In England, on the other hand, rigid airship construction was stopped in the early days of the War, but the success of the Zeppelins as sea-scouts and the bombing of London led to their construction being resumed. Commander Boothby goes into detail as to how the British designer was discouraged in his enterprise of trying to beat the enemy in airship construction and of how officialdom refused to pass certain features because "the Germans did not do it." Ultimately it was found, when enemy airships were brought down that they embodied the very features which had been *verboten* to our own designers! He instances the passing of wires through the gas-bags and

### DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

Sept. ...	Air Ministry Amphibian Competition, Felixstowe and Martlesham
Oct. 7 ...	Lecture on "Civil Aviation," by Sir F. H. Sykes
Oct. 8, 9, 10 ...	A.C.F. Meeting at Buc
Oct. 12, 13 and 14 ...	Air Ministry Conference, Council Chamber, Guildhall
Oct. 21 ...	Lecture, "A Comparison of the Flying Qualities of Single and Twin-Engined Aeroplanes," by Squadron-Leader R. H. Hill
Oct. 23 ...	Gordon-Bennett Balloon Race, Indianapolis, U.S.A.
Oct. or Nov. ...	U.S. National Aeroplane Race (New York to San Francisco)
Nov. 1 ...	First Open Competition for R.A.F. Boy Mechanics

the air-cooling of exhausts to make his points. However, these are matters of past history now, so we will not waste time in discussing them, particularly as there is some reason to think that the lesson has not been lost.

Unable to obtain airships capable of operating against Germany, the British experts paid close attention to the improvement of handling and mooring arrangements, with the result that by the end of the War a rather peculiar situation had arisen. Germany possessed a fleet of magnificent airships which she could only use in fine weather because of the lack of mooring facilities, while Great Britain had the mooring arrangements but no airships to use them! As Commander Boothby aptly remarks, had Germany possessed these mooring arrangements, she would have been able to make an entirely different choice of weather conditions for raiding England. The time chosen would have coincided with the approach of a depression with low-flying clouds, when guns and searchlights are useless and the chance of an aeroplane finding an airship flying in the clouds extremely remote. Our mooring systems are no longer secret, so that in a future war bad-weather airship raids must be expected. With the gun, searchlight, and aeroplane working under conditions unsuitable to them, we shall probably have to fight airship with airship.

From this brief review of the conditions it will be easily appreciated that we escaped very lightly indeed in the air war. Had the enemy kept pace in the matter of mooring arrangements with his improvements in airship construction, his Zeppelin raids on this country must have assumed very formidable dimensions. That they would have had any ultimate effect on the result of the War we do not think, because of the relatively small number of ships available for attack. The point, however, may be open to argument for the reason that, possessing no large airships of our own, we had no means of effective defence against such operations carried out in the sort of weather spoken of by Commander Boothby. Even now, when the War itself is becoming no more than a memory, one cannot but agree with the remark attributed to a famous General, to the effect that we *must* ultimately win the War, for the reasons that the Hun had done his best to win and failed, while we had done our best to lose and equally failed. Therefore, it was fore-ordained that we must win. At the same time, it is clear that the enemy also made mistakes almost as great as our own. We built no large airships. He built them, but hung on to the cumbrous sheds which limited their action to fine weather, when he should have turned attention to the possibilities of mooring out. That he did not do so is a matter for profound thankfulness.

#### Airships in Peace

Coming to the use of the rigid airship in peace, Commander Boothby seems to agree with the views which have so often been expressed in these columns. He regards it as the long-distance passenger and mail carrier of the future, with the aeroplane as its auxiliary where distances under 1,000 miles are concerned. For crossing the ocean, he says, the airship will always be superior to the aeroplane. The airship, too, is the only type of craft capable of a non-stop flight round the world with the present means of producing power.

These being the admitted facts of the case—and Commander Boothby has earned the thanks of all who are interested in the subject by thus calling the atten-

tion of the public to them—the question arises as to what is being done in the matter of the big rigids which are completed or are in course of building? Nothing has been heard as to their disposal or the purposes for which they are to be employed. For some time it was believed that the Government was willing to hand certain of them over to a powerful group associated with the shipping and armament interests, to be used for the purposes of opening commercial services. Nothing, however, has been heard of the scheme for some months past. It is reported that the terms ultimately propounded by the Government negotiators were so impossible that the other side could not accept them with any hope of running services on a commercial basis, and that the whole matter remains in abeyance. In the meantime, it is well known that the Germans are making plans to establish the first airship service between Europe and America. Are we to be left behind in peace as we were in the early stages of the War? Are these completed or partially completed airships to be allowed to rot at their moorings, or what is to be done with them? The public have a right to know what is being done, if anything, and in the event of there being “nothing doing” they have an equal right to know why.

#### The Menace of the Future

*The Times* comments on Commander Boothby's letter, and very ably sums up the lessons of the War in the air as they concern the possibilities of the future. It says:—

“Let it not be imagined that a future war of the air will provide a similar slow series of shocks enough only to stimulate the inventive powers of the combatants. Swift and calamitous it may fall on the nerve-centres of national activity. No question can be more urgent than how to shape a policy which shall secure continuous research in the technical side of aircraft, and ample provision of machines and men. In our opinion, for reasons that we need not for the moment repeat, the basis of such a policy must be commercial flying, the superstructure a relatively small combatant nucleus, watching, encouraging, learning from the progress of civilian achievement. The October Conference arranged by the Air Ministry is to address itself, none too soon, to the shaping of a policy. Its deliberations will be followed with sympathetic anxiety within, and with a keen interest outside the Empire.”

We feel that there is little or no need for us to elaborate the arguments thus clearly enunciated. They are absolutely on all fours with what *FLIGHT* has been urging ever since the Government policy of aerial disarmament after the War began to take shape. We can do no more than repeat what we have so often said: that in the due encouragement of civil aviation, to the end that a powerful reserve to our active Air Force may be built up against the hour of need, lies the whole future of our defence against the sudden and overwhelming attack from the air which a state of unpreparedness must invite.

We trust, with *The Times*, that the Conference which is to sit in London during the present month will result in the evolution of a real aerial policy. Past experience, however, does not encourage such a belief. Nothing could have been stronger than the recommendations of the Advisory Committee, but while the principles of these have been approved the action taken has been almost absolutely *nil*. We can only express the pious hope that the Conference will indeed succeed in pushing the Government up to the formulation of a real aerial policy—and the intention to follow it out.



## The Camera and the 'Plane

SEPTEMBER 30, 1920



Teignmouth, from an Avro seaplane

"Flight" Copyright



## European Air Transport

Even if commercial aviation is not a very hardy growth in this country, we can at least derive a little consolation from the reflection that it is in no small measure due to British enterprise in pioneering the first regular services between London and Paris that the attention of Europe was focussed upon the new transport. In all, the air routes of the Continent cover at present some 6,000 miles, over which commercial services are actually being operated. Of projected routes, which will come into use very shortly, there are 7,000 miles. Before long, therefore, aircraft will be flying commercially along 13,000 miles of regular routes. Within the next few months it is confidently believed that there will be in operation a really commercial day and night service from London, right across Europe, to Constantinople, enabling the traveller to leave London in the evening and to dine in the Turkish capital next day. Next spring it will be possible to make the journey from London to Berlin in the day. Copenhagen will also be brought within the scope of the day's journey.

No matter to what country we turn for our examples, we find that all, even those which have been regarded as the most backward among the European nations, are giving close attention to the new transport, and are making plans either for internal services or for linking up with their neighbouring States. Only in England does commercial aviation seem to lag, and then only for the reason that the Government of this country has no aerial policy. We can only reiterate the hope that the discussions which are to take place at the Air Conference, in a fortnight's time, will bring these facts into the full light of day, and serve to impress upon the authorities concerned the vital importance of at once laying down the foundations of a sound and progressive policy of encouragement. Once again we must repeat that we are not pleading for the bolstering up of an industry which is incapable of helping itself. That is very far from being the case. The proper development of aerial navigation is so indissolubly bound up with the future of the Empire and its very existence that, in its proper perspective, it is almost the most pressing and important problem with which our statesmen are confronted at the moment—outside coal and Ireland.

## The Aerial Reporter

The honour of being the first newspaper in the world to possess an aeroplane of its own for use by its news-gathering staff has fallen to the Baltimore *Evening Sun*. From the very early days of aviation the *Sun* has been remarkable for its enterprise in connection with the new transport. As far back as 1910 it offered a prize for the first flight over the city of Baltimore, which was won by Hubert Latham.

The *Sun* is not the first journal to make use of the aeroplane in the ordinary course of journalistic work. Certain British newspapers could tell a great many stories of how aircraft has helped to get news to the public with the minimum of delay, while it is now a commonplace that they have been very largely employed in the distribution of the news-sheet, especially in such circumstances as follow on widespread transport strikes. The enterprise of the *Daily Mail* during the railway strikes in France and England is too fresh in the memory to require more than a passing reference. But hitherto no journal has thought it necessary to acquire aircraft of its own, nor do we suppose the need will be felt in this

country for a very long time to come, certainly so far as concerns the every-day work of its reportorial staff. Conditions in America are different. Distances are much greater and roads very much more indifferent than here, so that it is quite possible to imagine a set of circumstances which would render the aeroplane the one and only vehicle of transport that would enable a journal to adequately "cover" an event occurring in some remote part of the country. The *Sun* has set the example and we may look forward to the time, in the near future, when every one of the great American newspapers will own its own fleet of aircraft for general utility purposes just as it now owns a fleet of cars and lorries. The management of the *Sun* is entitled to congratulations for being first to realise this and to act upon the realisation.

## Germany's Bid for Supremacy

For twelve months or more there has been endless discussion about the future of the big rigid airships which were built for British service during the War. From time to time rumours have been current to the effect that powerful groups associated with the ship-owning and armament interests were to purchase these craft on favourable terms from the Government and would operate them on long-distance overseas services. Then we heard that the negotiations had been called off and later that they were on again. The fact seems to be that nobody is particularly interested in what becomes of these craft. The Government, as we have said in another connection, has no policy. The Post Office is at best only lukewarm so far as the carriage of mails by air is concerned, while the people who will have to find the money to develop aerial services are scarcely likely to sacrifice time or money for an indeterminate enterprise.

In contrast with what is being done—or intended to be done—in Germany this is indeed a bad showing. According to the latest reports a huge enterprise is on the way, financed by German and American money, for carrying on regular airship services across the Atlantic, in combination with certain of the great German maritime companies. Not the least galling feature of the matter is that it is proposed that these services shall actually make London a stopping place *en route*! After all that has passed, and more particularly in view of the claim that has been made that in the technique of the airship we have overtaken and actually passed the German constructors, that a German service should actually contemplate a port of call in England is the last word.

Apart from these airship projects, there is no doubt that Germany intends to make a strong bid for the supremacy of the air. Whether it be true or not that she looks to the air for her revenge for her defeat in the last War is more or less beside the point for the moment. Even if she does, it must be years before she can accumulate the necessary strength to enable her to make a bid for that revenge with any prospect of success. The graver issue in the meantime is the commercial prestige which must accrue to the Power that is foremost in aerial development. It needs very little imagination to visualise the effect that will be produced in America—and even in this country—by the arrival of the first airship liner in regular service, followed periodically by others in succession. Once more, when will the British Government announce a concrete aerial policy, or, alternatively, confess that it has none and is incapable of formulating one?





### Squad Drill at the Uxbridge R.A.F. Depot

SITUATED in pleasant surroundings just outside Uxbridge, Middlesex, and not as yet rigidly fenced off from the outer world, is the R.A.F. Depot, where, among many other activities, the examination and training of airmen is now carried out. An idea of the size of this establishment may be formed when it is pointed out that at the present moment there are approximately 600 men being examined and undergoing training at the Uxbridge Depot. The examinations are of different characters, beginning with the medical examination, and passing through educational and trade examinations to the final one before the men are either posted to various units or, as is more frequently the case, to the Manston training centre for further technical training.

While the R.A.F. is essentially a technical service, it is realised that there may be times when units may be called upon to defend their stations when serving abroad, and so at Uxbridge musketry and squad drill are among the subjects in which proficiency must be attained before the men are considered ready for leaving. By the use of modern systems of training, the time required to reach the required standard is much shorter than formerly, the chief secret of the new system, we understand, being that the men are taught to repeat each command and therefore much more rapidly learn the movement or manoeuvre following the command. That the new system is effective will be realised when it is pointed out that some of the men are sufficiently trained after four weeks only, and the longest time required for the "Soldiering" part of the training at Uxbridge is three months, while a fair average would probably be two months.

During a recent visit our representative saw several squads at drill, and one which was composed of men who had been at the Depot eight weeks only did a slow march of which no old soldier need be ashamed. Apart from the squad drills the men are put through a course of physical exercise in the gymnasiums, not forgetting lessons in the noble art of self-defence, which is greatly enjoyed by the men.

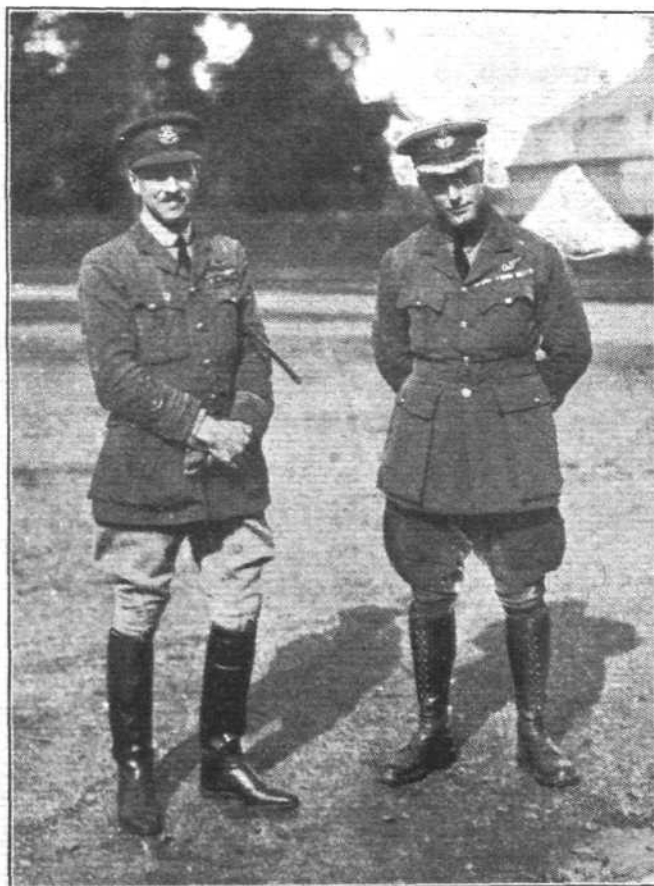
Although the technical training of the men is not undertaken at Uxbridge, certain duties which they may later be called upon to perform are included, such as propeller-swinging. For this purpose a batch of fuselages, complete with their engines, are housed in a shed with open front, with wire netting screens so as to prevent pieces of paper, etc., from being sucked into the

propellers. To the uninitiated this particular shed has somewhat the appearance of a poultry-house, until one is undeceived by the roar of a Gnome mono., a couple of B.Rs., and one or two Rolls-Royces and Siddeley-Pumas. The men differ considerably in the time taken to become proficient in the gentle art of "prop. swinging," some getting the knack almost at once, others never becoming more than indifferent at the game. Although the time is probably not far distant when this antiquated method of starting an engine will be abandoned altogether, the training is most excellent, and 10 minutes of attempting to start a refractory engine is worth all the physical culture "systems" ever invented.

Although the training at Uxbridge is thorough and efficient, the life of the airmen is by no means all work and no play. In addition to the boxing matches arranged at intervals, there are facilities for ball games of various sorts, in which the men join with great interest. The officers have purchased and are maintaining, out of their by no means excessive pay, quite a nice batch of beagles, toward whose keep the men are not asked to contribute, but which they are permitted to follow. For rainy evenings the Uxbridge Depot sports a cinema the equal of which might be difficult to find at any R.A.F. station, as may be judged from one of our photographs. It should also be mentioned that up to a short time ago Uxbridge was the only depot to have a pukka band.

The C.O. of Uxbridge Depot is Group-Capt. Hearson, C.B., D.S.O., who was in the K.B. section at one time during the War, and who probably holds the record for parachute jumps, having made close on 300 descents. Later he made quite a name as C.O. of one of the cadet training schools. He is ably assisted by Squadron-Leader Baldwin, D.S.O., O.B.E., and a staff of officers, each of whom is a specialist in his own line.

From Uxbridge, those men who require training are sent to Manston, a large aerodrome lying between Margate and Ramsgate, one of the healthiest spots in England, where the school of technical training, as it is designated, has been laid out. At present there are well over 1,000 men under training at Manston, and before long it is anticipated that the 1,500 mark will be reached. There are two sections, No. 1 and No. 2, but when the full number is reached there will be a third section, so that each



THE HEADS OF THE R.A.F. UXBRIDGE DEPOT: On the right the C.O. of the Depot, Group-Capt. Hearson, C.B., D.S.O., and on the left Squadron-Leader Baldwin, D.S.O., O.B.E.



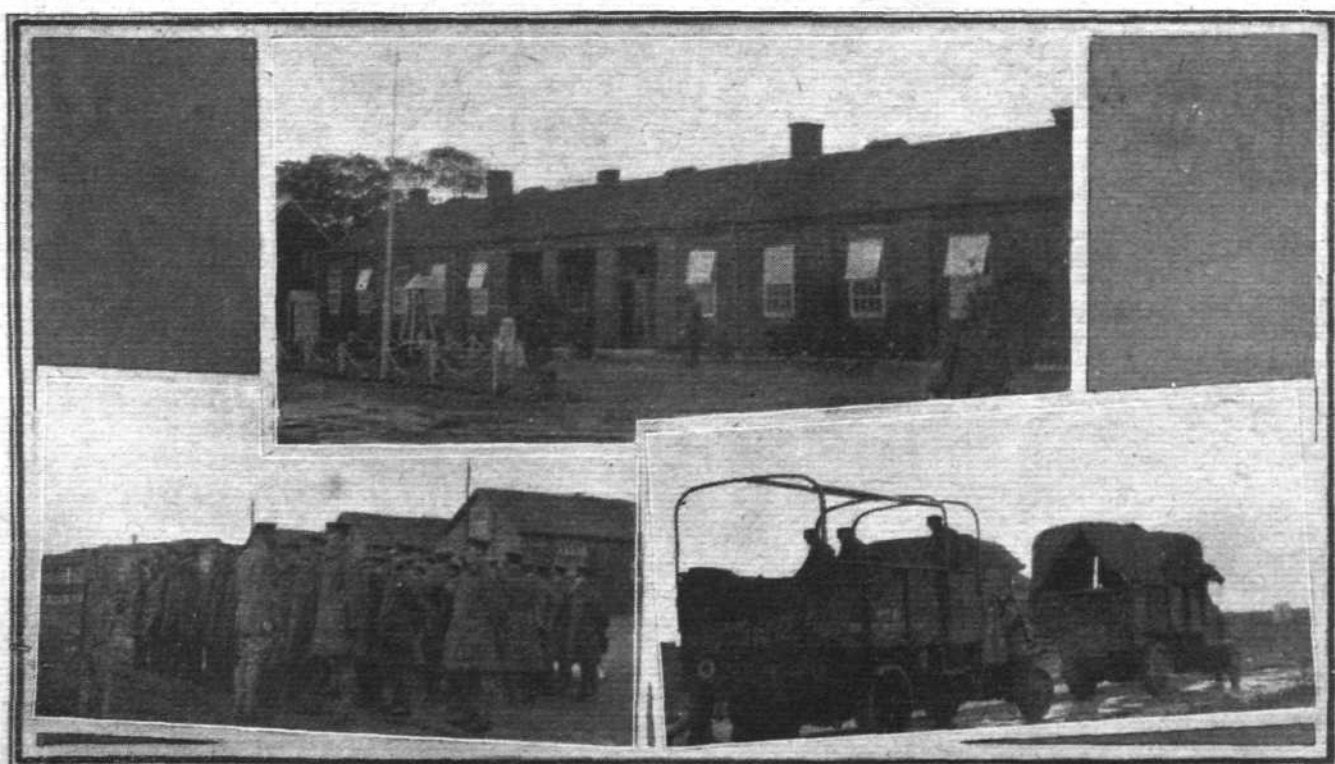
AT THE R.A.F. DEPOT, UXBRIDGE: On the left the men are seen receiving their pay. The right-hand picture shows the R.A.F. Beagles. These are financed by the officers, but the men are allowed to follow them.



AT THE R.A.F. DEPOT, UXBRIDGE: A lesson in "prop. swinging," which many find is not so easy as it looks.



An R.A.F. CINEMA: Probably few Air Force stations can boast a cinema theatre equal to that at the Uxbridge Depot, the frontage of which is seen above.



AT MANSTON AIR STATION: Above, the entrance to the offices. Bottom left, a squadron of recruits from Uxbridge being inspected by the C.O. Bottom right, Drivers' (M.T.) off for a lesson on the road.



one will comprise 500 men under training. On arrival at Manston the recruit is posted to a section, according to the trade in which he is to be trained, No. 1 taking drivers (mechanical transport), fitter-drivers, fabric-workers, vulcanisers, and general fitters, and No. 2 only two trades at present, riggers and carpenters.

Practically all the men are unskilled when they arrive at the station, and as the aim is to make them thoroughly efficient at their trade, no attempt is made to rush the training. During a recent visit one saw many of the classes at work, and it was evident that the men were taking a keen interest in what they were doing, and were really endeavouring to learn. It is from this point of view of technical training that the R.A.F. is so superior to the older services. The men join up unskilled, and leave the force as skilled tradesmen, having been taught a useful trade and been paid while they were learning. Even if when they leave the Service, the ex-airmen are unable to get jobs in connection with aircraft work, they will still be able to turn their skill to good account in other industries.

The training is carried out under almost ideal conditions, as all the shops are large, airy, light, and well-equipped, many of them having been converted from the hangars which were erected at Manston during the War. The school was only opened at the beginning of June, and the progress made during a few months has been most encouraging. When it was decided to start the school, all R.A.F. units were

asked to contribute their best officers and non-commissioned officers to staff the new school, and it is largely due to the splendid response which was made that the school has been able to make such a fine start.

While, naturally, it is the technical training which assumes the chief interest at Manston, the physical well-being of the airmen is kept well to the front. The dormitories are well arranged and kept even now, and improvements are continually being made to increase the standard of comfort of the men. The dining-halls are also designed to ensure quick and clean service, while the up-to-date cook-house enables the good food supplied to be cooked and dished-up to the best advantage.

The facilities for recreation include a well-managed canteen, a large swimming-bath with water-polo set, a cinema theatre, and the *padre* also runs a library which finds a good deal of patronage. There are large playing-fields available, and steps are being taken to organise outdoor games and sports. A number of clubs have been arranged, and the recruits as they arrive are allotted to one or other by ballot. It is proposed to organise inter-club football contests, etc.

After they have finished their work the men are free to go into Margate or Ramsgate, and as the bus companies will not run services to the aerodrome, the station runs its own transport, the men paying the actual running expenses, so that the cost of this does not fall on the nation.

Manston is under the command of Wing-Commander Primrose, D.F.C.

## R.A.F. CADET EXAMINATION

An examination for entrance into the Royal Air Force will be held on November 16, 1920, and following days. Forms of application for entry will be furnished on application by letter addressed to the Secretary, Civil Service Commission, Burlington Gardens, W. 1. The form should be completed and forwarded to the Secretary, Civil Service Commission, *not later than September 30*. No form of application received after October 14 will be accepted under any circumstances.

At this examination not less than 20 cadetships will be open to competition, less such number as may be awarded to King's Cadets, King's India Cadets, or Honorary King's Cadets. This number will include the grant of not less than one Prize Cadetship. The examination will be conducted in accordance with the Provisional Regulations for the Royal Air Force (Cadet) College, Cranwell (F.S. Publication 121), and amendments thereto obtainable from H.M. S.O., Imperial House, Kingsway, or from any bookseller. The examination will be held in London, or at other centres in the United Kingdom. The fee for the examination in London will be £4. At any other centre the fee will be £5 in addition to a local fee payable in some cases to the college and school authorities.

The amounts payable towards the cost of uniform and books are now £65 prior to first joining, and further payments of £25 and £10 at the commencement of the third and fourth terms of residence respectively. The limits of age for entrance to the College will be from 17½ to 19 years (the half-year being reckoned by calendar months). The candidate must have attained the age of 17½ and not have attained the age of 19 on January 1, 1921. Exception is made in the case of those who have had various classes of service. In these cases the maximum age is 21.

Additional marks will be awarded to candidates with various classes of service as follows:—

(a) Candidates who qualify for Certificate "A" in either the Senior or Junior Division of the Officers' Training Corps, a secondary school, or a recognised Territorial Force Cadet unit will be eligible for the award of the actual marks obtained at the Certificate Examination, *i.e.*, from 300 to 600.

(b) Candidates who were serving on January 1, 1920, or who had served prior to that date as officers, warrant officers, non-commissioned officers or men of the Royal Navy, Royal

Marines, Regular Army, Royal Air Force, Special Reserve, Indian Army Reserve of Officers, Militia, Territorial Force, or Forces of the Overseas Dominions, and who have completed four months' continuous service and can furnish certificates to that effect will be entitled to an award of 400 marks.

(c) Candidates who were serving on March 1, 1919 (or who had served prior to that date), in the Senior Division of the Officers' Training Corps, and can furnish a certificate to that effect, will be entitled to an award of 400 marks.

The certificates required in (b) and (c) above will be rendered on a form supplied to applicants by the Civil Service Commissioners. Under no circumstances will a candidate be awarded the 400 marks for service in addition to the marks gained in Certificate "A" examination. No candidate will be accepted unless he is pronounced physically fit for entry into the Royal Air Force by a Medical Board. Candidates are warned that if they elect to be examined at centres other than London it will still be necessary for them to come to London for their medical examination shortly after the termination of the educational examination.

Parents and guardians are strongly recommended, in order to lessen the chance of subsequent disappointment, to have their sons or wards examined by a medical practitioner previous to their becoming candidates for a commission in the Royal Air Force. A pamphlet giving details as to the standard of medical fitness demanded can be obtained on application to the Secretary, Air Ministry (D.M.S.). Cadetships at the Royal Military Academy, Woolwich, and the Royal Military College, Sandhurst, will also be open for competition at the same examination. Particulars may be obtained on application to the Secretary, War Office, Whitehall, London, S.W. 1. A candidate who fulfils all the necessary conditions may compete for a cadetship at the Royal Air Force Cadet College, and also for a Cadetship at the Royal Military Academy or Royal Military College. Candidates desiring to do this must express definitely their order of preference before the examination begins. Candidates who compete for entrance to the Royal Air Force Cadet College, whether as first, second or third choice, must undergo the Royal Air Force Medical Examination. A candidate will be accepted as medically fit for the Army Colleges if he passes the Royal Air Force Medical Examination and is within the standards set by the Army.

### Naming Dirigibles in France

THE Zeppelin "L. 72," handed over to France, has been renamed, it having been decided that the designation DR 1 was not in accordance with French practice, which gives names to airships. It is in future to be called the *Dixmude*, thus recalling the magnificent work of the French marine fusiliers in defence of that town in October and November, 1914.

### Flying from Formosa

FROM a report emanating from Tokyo it appears that a scheme is being considered in Japan for the establishment of an aerodrome at Mako, on the Island of Formosa, which should serve as a base for an aerial service to South China and the South Sea Islands. The project also contemplates the starting of a laboratory for aeronautic research at Mako, and also an aerial police force for the Island itself.

## THE GORDON-BENNETT RACE

It had been anticipated that this year's race for the Gordon-Bennett Aviation Trophy would have been a much better contest than any of the five previous competitions. Great Britain and the United States had challenged France, and the teams of each of the three countries comprised very fast machines. But disappointment followed on disappointment, and in the end only one competitor—Sadi Lecointe, on a French Nieuport—completed the full course of 300 kiloms. without trouble, and he thereby won the trophy for France for the third time.

During the early morning of Tuesday a thick mist hung over the ground, and it was not until 1.36 p.m. that the first competitor got away, this being Kirsch on one of the French Nieuports. He was followed by de Romanet on a Spad, and the third member of the French team—the favourite—Sadi Lecointe. The American team—Rinehardt on the Dayton-Wright and Major Schroeder on the Army machine—followed a few minutes after, and then there was a long wait before Raynham, on the Martinsyde "Semi-quaver," the only British representative, got away. Kirsch did the first 100 kiloms. in 21 mins. 29 secs., while de Romanet took 22 mins. 52½ secs., but both had to come down soon after they had completed the second lap, and Kirsch retired. The Americans did not survive long, Rinehardt having to

come down after a quarter of an hour, having had difficulty with his steering, while Schroeder was put out of the contest by engine trouble at the end of the first round.

Raynham was unable to complete one lap, apparently being in trouble with the engine of his machine.

This left Sadi Lecointe, whose time for 100 kiloms. was 21 mins. 36 secs., for 200 kiloms. 43 mins. 42½ secs., and for the full course of 300 kiloms. 1 hr. 6 mins. 17½ secs., his average speed working out to 270 kiloms. (168 miles) per hour. De Romanet completed the course in 1 hr. 39 mins. 50½ secs.

The Trophy remains in France, and as she has won it three times it stays there permanently. Sadi Lecointe also won the cash prize of 10,000 francs offered by the Aero Club of France, and a similar prize offered by the Aero Club of America.

The French team had been chosen in an eliminating trial on Sunday, when the three pilots mentioned above were selected. Barault, on a Borel-Hispano, would probably have secured the third place if he had only flown the course as it was arranged.

The American team was reduced by one owing to the accident to Rholf on the Curtiss. In landing at Villacoublay the chassis collapsed, and the pilot was injured, but not very seriously.

## BIRTH OF THE "BLIMP"

A CORRESPONDENT writes: "To your interesting article by 'Rafex,' in the issue of September 16, I may be permitted perhaps to add, by way of a footnote, a little 'secret history' of which I happen to have direct and personal knowledge.

"It was some time before the War that Mr. Holt Thomas saw a field of utility, from a naval point of view, for a very small dirigible balloon; but at that time the Admiralty were not prepared to go into the matter.

"Then, however, in the early stages of the War, when the question arose of scouting for submarines, and also of coastal patrol, Sir Charles Otley, of Armstrong's, found an opportunity of mentioning personally to Lord Fisher this scheme for a small airship.

"His Lordship took up the idea with characteristic energy. Mr. E. T. Willows, who was then working for Mr. Holt Thomas, was asked to call at the Admiralty; and, at the same time, the lengthy correspondence between Mr. Holt Thomas and the Naval authorities being looked through again, he himself was asked to see Lord Fisher.

"The result was a conference at the Admiralty, Lord Fisher himself taking the chair.

"Mr. Holt Thomas, arguing the case for the 'Blimp,' discovered that—at any rate at that particular time—there were certain strong Air Department prejudices against any such machine. An objection was raised that it only had one motor. 'So has the aeroplane,' replied Mr. Holt Thomas, who found it necessary also to combat any suggestion that these little 'Blimp' airships should be compared in any way with bigger craft of the lighter-than-air type.

## AIR WORK IN MESOPOTAMIA

THE War Office *communiqué* of September 20 stated:

"Aerial reconnaissance over Kufa [beleaguered garrison] observed a request for tobacco and cigarettes painted on a roof, from which it can be inferred that supplies of necessities and ammunition are satisfactory.

"It was reported that Sheikh Dhari, the truculent Sheikh of the Zoba tribe, was located 25 miles north-west of Baghdad with a following and 1,000 camels. We inflicted a considerable number of casualties both in men and camels by means of aerial attack.

"A reconnoitring air raid was carried out on September 16 against two villages east of Tuz Khurmatli, where insurgents have been harboured who are continually damaging telegraph lines.

"N.W. Persia.—Persian Cossacks report that a Bolshevik aeroplane on September 17 dropped four bombs on Imanza."

The *communiqué* of September 21 stated:

"Aeroplanes fired on and dispersed a hostile concentration 16 miles south of Samarra."

The *communiqué* of September 23 stated:

"On the Middle Euphrates the pilot and observer of an aeroplane who fell into the hands of tribesmen after a forced landing were brought into Feluja, where there is a British garrison. These tribesmen had refused to hand them over to a Sheikh hostile to us who had demanded their surrender."

"The meeting promised, indeed, to become a little contentious. Suddenly, however, Lord Fisher intervened.

"How much would a machine cost to build?' he asked Mr. Holt Thomas.

"The latter replied that it was difficult to say off-hand.

"Well, give a guess,' urged Lord Fisher.

"Whereupon Mr. Holt Thomas guessed about £2,500.

"At which Lord Fisher turned upon the conference with the words, 'Then what are we conferring about?' And in ten minutes Mr. Holt Thomas had a contract requiring him to produce a ship as quickly as he could.

"Can you build one in a week?' asked Lord Fisher."

"Mr. Holt Thomas answered that he was afraid he could not, but he promised to try and complete one in a month. There was no proper fabric available, and a doped aeroplane fabric had to be used. This leaked, but at the same time it enabled the idea to be demonstrated; and once this had been done, and Lord Fisher's interest secured, the Air Department went 'full steam ahead.' Nor did matters stop at the 'Blimp.' For the 'Coastal' type, which followed, Mr. Holt Thomas supplied the first envelope; and both this machine and the 'North Sea' type were on the Astra-Torres principles, the rights of which belonged to his company, Airships, Ltd.

"Not long before his lamented death Lord Fisher introduced Mr. Holt Thomas to a friend as 'the originator of the "Blimp,"' adding the typical observation—the man who produced an airship in three weeks when some experts told me it would take years."

The *communiqué* of September 24 stated:

"Two intensive air raids on Samarra town appear to have produced a demoralising effect on the hostile inhabitants, who are said to be withdrawing in large numbers eastward."

"Ramadie-Feluja Area.—The hostile sections of the Zoba tribe have been forced by our air attacks to move northward and to clear the Baghdad-Feluja railway.

"... the area on both sides of the line of communication between Baghdad and Mosul is still disturbed, despite the dispersal of small gatherings by bombing.

"Diala division.—The main remaining centre of the trouble is at Deltawa, where a body of 500 tribesmen have advanced to the right bank of the Diala just above Bakuba. Aerial action against this band has inflicted some casualties on them."

The *communiqué* of September 25 stated:

"One of our aeroplanes dropping stores on the defence vessel *Greenfly*, which is aground in the Euphrates, was shot down in the river by tribesmen, who carried off its occupants on their reaching the river bank."

The *communiqué* of September 27 stated:

"A hostile concentration reported near Kut el-Hai (25 miles south-east of Kut el-Amara) was effectively attacked on the 23rd by aeroplanes, who bombed the fort and camps near that place. The machines were fired on, but returned undamaged."



# AIRCRAFT DEPRECIATION\*

It is a well-known fact that auditors now accept as an axiom that in commercial life as many firms fail through not knowing their cost price as from any other single cause. If this is true of ordinary everyday business life, it is going to be very greatly accentuated in commercial aviation. At the present moment it is probably safe to say that of the various firms engaged in the operation of aircraft commercially, not one knows with any degree of certainty their cost. This item, as every one is aware, is made of various factors, which might be tabulated as cost of operation, interest on investment, and depreciation. It is a comparatively simple matter to arrive at an exact total for the first two, but the third is always difficult to determine.

Experience in operating of aircraft on anything like a large scale dates entirely from the outbreak of war. So very little was done in aviation prior to 1914 that the knowledge gained of aircraft as a commercial proposition was negligible. War experience is, unfortunately, of such a nature as to be of little use when considering the operating of aircraft from a commercial point of view. The result is that today all aviation companies are more or less in the dark and merely waiting the results of their first year's operations to determine with some degree of certainty the various figures which will go to show them whether or not they have made a loss or a profit. A typical state of affairs might be mentioned when the writer called upon the managing director of one of England's greatest aircraft concerns for the express purpose of finding-out how this company estimated depreciation. The statement given was: "We have very little idea what our depreciation is, but we are accepting as an arbitrary figure 100 per cent. per annum per machine."

Further enquiry amongst the various commercial concerns in England elucidated the fact that each one was as much in the dark as the one quoted. The inference is obvious. These very large concerns are operating, hoping they are making a profit, but totally unable to say definitely that they are.

The airy way in which the average pilot dismisses the question of costs from his mind may have been well enough during the War, when all efforts had to be concentrated upon winning the War irrespective of whether it was won at a price of £8,000,000 per day or £80,000,000, but this state of affairs, of course, cannot continue, and business-men demand figures, not theories. A close study of the question, combined with details gleaned from records kept during four years of aerial warfare, such information as has been gained by conversation with those interested in commercial aviation in England, and the study of figures compiled in the States, has resulted in the following estimate of that major portion of the cost of aerial operations, depreciation.

For purposes of reducing depreciation to a percentage basis this factor has been divided into two portions, A and B.

A.—Constant Depreciation.

B.—Depreciation due to flight. (i) Crash risk. (ii) Deterioration.

I will now endeavour to explain these items.

## A.—Constant Depreciation.

Every one who has been connected with aircraft knows that if an aeroplane or seaplane is placed in a hangar and left there for a period of years, despite reasonable care being taken of it, at the end of a certain period of time the machine will have lost a great portion of its former value. In the first place the fabric will have become soggy, and certain parts of the woodwork will in all probability have warped. This depreciation would in time entail a very thorough complete overhauling. A still more serious factor that has to be considered, however, is the fact that in a period of years, due to obsolescence, the machine will have lost practically all of its former value. It is reasonably safe to say that the machine of today will not be flown in general use four years hence. Type and kind are constantly in a state of evolution, and of this fact one must not lose sight. This is particularly true at the present time, when practically all machines on the market have been built for war purposes with the lowest possible factor of safety and the greatest possible speed and climb.

One might instance the case of the various types of training machines on which many of the readers of this article learned to fly. It is almost ludicrous to cast one's mind back to even such a recent date as 1915, and think of the Maurice Farman Long Horns and Short Horns, the Grahame-White Henriets and the Henri Farmans, on which we used to make

our earliest efforts. These machines have long ago become obsolete for all purposes, and if any service today their market value is practically nil owing to this factor of obsolescence. It is difficult to estimate this constant depreciation accurately, but if one accepts a maximum of three years as being the usual period of time during which a war-type of machine may be expected to serve a useful purpose, then we get a figure of approximately 3 per cent. per month constant depreciation.

It is emphasised that this estimate must be taken into account whether the machine is flown or not.

## B.—Deterioration Due to Flight.

(i) Crash risk. (ii) Deterioration.

(i) *Crash risk.*—Everyone who has had any experience of flying knows of the large crash risk that was incurred during the War in the operating of aircraft. One had only to stand on a busy aerodrome any day, when machines were constantly landing or taking off, to see how large this factor is in the percentage of costs. No matter how skilful the pilot, accidents will happen even in peace, and the resulting expense involved in repairing the aircraft will be considerable. Difficulty is again experienced in estimating the usual amount of time a machine can in peace be flown without being crashed. Practically all we have to guide us is the War experience of War pilots. In this connection one can recall the very considerable publicity given to a young gentleman in the R.F.C., who was heralded by the Illustrated Daily Press as the "Crasher King," having survived no fewer than seventy-eight crashes. History does not relate why he was permitted to continue on his career of vandalism. One can also recall a very senior officer of the R.N.A.S., whose enthusiasm for flying very greatly overbalanced his skill as a pilot, and whose write-off's in the aggregate must have amounted to a prince's ransom. Needless to say there is no place in civil life for this type of pilot, and, happily, at least one pilot in known to the writer who has completed 1,000 hours' flying in France without a single write-off against him.

Investigation of the subject seems to indicate that among high-class pilots one must look for a complete write-off in aeroplanes every six hundred hours and in seaplanes every five hundred hours. This record will probably improve very considerably as War-time machines give place to commercial types, but until the War products are used up it is not considered safe that one should figure any less than one-sixth of one per cent. per flying hour crashes against aeroplanes and one-fifth of one per cent. per flying hour against seaplanes.

It may be explained that the loss in seaplanes is usually greater than in aeroplanes, as slight accidents often result in the seaplane sinking, thus converting a partial into a total loss.

(ii) *Deterioration.*—The last factor to be considered is deterioration. Every type of aircraft has a flying life, that is to say after a machine is erected and flown a time will come when, apart from crashes, it will become unfit for further service. This life must, of course, differ in different types of machines, the life of some being greater as the factor of safety of the machine is higher and landing speed lower, etc. For other types of machines the life will be shorter. One type of machine may be instanced which probably has the worst flying record of all, the flying-boat. In one of the largest seaplane stations in England it has been found from careful records of figures kept during the War that the life of the hull of large flying-boats was just over seventy hours. This figure excluded all war risk and simply took care of wear and tear. In another squadron of the same type of machine, the average was 103. On the other hand, we find examples of aeroplanes whose life averaged between 700 and 800 hours, and in one or two instances the known life of an aeroplane has even been as great as 1,000 hours with only very minor repairs. A careful study of all figures available seems to indicate that the average flying life of an aeroplane may be stated to be 700 hours and of a seaplane 400 hours, or, in other words, that the allowance for deterioration should be at the rate of one-seventh of one per cent. per flying hour for aeroplanes, and one-quarter of one per cent. per flying hour for seaplanes.

It now becomes apparent that A and B must be considered separately. In the event of an aeroplane being bought and not flown, the only factor that need be considered is constant depreciation, since the machine is not subject to either crash risk or deterioration, due to wear and tear. In the event of a machine being used during the summer months only and stored during the winter months it will be necessary to charge depreciation under different headings. In other words,

\* Issued by the Air Board of Canada.

during the winter months when machine is stored, depreciation should be charged as shown in A.

A.—Constant depreciation—3 per cent. per month.

The two remaining factors to be considered are B (i) Crash risk and B (ii) Deterioration.

B (i)—Crash risk. It is obvious that since under B (ii) the aeroplane is to be written off in 700 hours, it will be unnecessary to insure it against crash risk beyond that period. It is also obvious that it is unnecessary to insure a machine against crashes right up to its full value if the machine has done say 699 hours' flying. B (i) should, therefore, be estimated on a sliding scale, or, for the purpose of averaging, the figure of one-half of one-sixth, or one-twelfth, per cent. per flying hour may be taken as an equitable basis.

B (ii)—Deterioration.—This factor may be considered as stated, one-seventh of one per cent. per flying hour. In adding the above figures together, we find that on an aeroplane detailed to carry out certain operations lasting six months, and entailing 300 hours' flying, the cost of the machine being \$10,000, depreciation should be figured as under:—

B (i)—Crash risk—one-twelfth of one per cent.  
per flying hour for 300 hours ... .. \$2,500  
B (ii)—Deterioration—one-seventh of one per  
cent. per hour for 300 hours ... .. \$4,286

Total depreciation ... .. \$6,786

If the machine is stored in a hangar for the balance of the year we will get the additional cost of:—

A.—Constant depreciation—3 per cent. per  
month on \$10,000 for six months ... .. \$1,800

In other words, the total allowance which should be made in calculating cost of operations or insurance and depreciation upon a new machine valued at \$10,000 and used for operations for a period of six months during which it was flown 300 hours would be \$6,786, or sixty-seven and four-fifths per cent. of the value of the machine.

It is particularly emphasised that the above calculations are based on War-type machines and with War-time experience. These figures will unquestionably be greatly modified as the present types of machines give place to these designed for commercial uses, and as the attitude of mind created by war experience is altered under peace-time conditions.

The reader of these figures will naturally be inclined to doubt them; certainly this figure is very large, but experience goes to prove that it is at least approximately correct. The business-man unfamiliar with the use of aircraft will immediately state that depreciation is so large as to rule-out aircraft entirely as a feasible mode of transport. This I do not believe to be the case, but the estimating of the cost of operations in various parts of Canada has made it clear that if aircraft has to be used economically, every machine must be flown to its maximum capabilities. In other words, machines must not be allowed to "eat their heads off." For example, in figuring up the cost of operations of six aeroplanes flying in all 120,000 miles, it has been found that the figure for depreciation was as low as 16.6 cents per mile out of a total of 62.7 cents per mile. In another instance, where only 50,000 miles of flying was required, the depreciation amounted to 96 cents out of a total of \$2.04 per mile. Various other examples go to show that the more flying that is done the more reasonable both depreciation and operation costs become.

During the War no attempt was made to build a machine in such a way that this figure would be reduced. The life of an aeroplane on active service was exceedingly short, whether it came to its end by crash risk, by deterioration, or at the hands of the enemy, few machines on active service lasted much over 100 hours, hence a machine designed to stand 1,000 hours' work was merely a waste of energy. Now that the War is over, however, and aircraft manufacturers are turning their attention to the commercial use of aircraft, serious efforts are being made to design and build machines that will last for upwards of 1,000 hours. Prominent in this direction is the advent of the all-metal machine. Already very satisfactory wings have been made which, while increasing the weight only 10 per cent. over present methods of construction, give a factor of safety of 12 instead of 6. In England today the largest machine ever constructed is being built of metal, and it is hoped that in this and subsequent types the life will be very much lengthened.

Unquestionably this is the greatest problem facing aircraft manufacturers today, and one that will retard the commercial use of aviation until it has been satisfactorily solved.

## THE LONDON-CONTINENTAL SERVICES

### FLIGHTS BETWEEN SEPTEMBER 19 AND SEPTEMBER 25, INCLUSIVE

Route	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
			Mails	Goods				
Croydon-Paris ...	25	51	10	16	22	h. m. 2 32	Westland G-EAJL (1h. 52m.)	A.9 (4), A.16 (3), A.18 (2), B. (1), G. (2), N. (1), Sp. (1), V. (1), W. (2).
Paris-Croydon ...	28	75	4	16	25	3 13	Airco 16 G-EASW (2h.)	A.9 (5), A.16 (4), A.18 (2), B. (2), G. (3), N. (1), Sp. (1), V. (1), W. (1).
Cricklewood-Paris ...	9	52	—	6	7	3 28	H.P. G-EALX (2h. 30m.)	H.P. (6).
Paris-Cricklewood ...	8	44	—	5	8	3 26	H.P. G-EATM (3h. 7m.)	H.P. (6).
Croydon-Amsterdam ...	6	5	—	6	6	3 26	Airco 9 G-EAPL (2h. 22m.)	A.9 (3), A.16 (2).
Amsterdam-Croydon ...	7	9	6	6	7	2 40	Airco 9 G-EAPU (2h. 15m.)	A.9 (3), A.16 (2).
Cricklewood-Amsterdam ...	5	8	3	3	?	2 57	?	A.4 (1), A.9 (3).
Amsterdam-Cricklewood ...	5	?	?	?	?	?	?	A.4 (1), A.9 (2).
Croydon-Brussels ...	—	—	—	—	—	—	—	—
Brussels-Croydon ...	—	—	—	—	—	—	—	—
Cricklewood-Brussels ...	7	7	5	5	7	2 36	Airco 4 O-BALO (2h. 15m.)	A.4 (2), A.9 (3).
Brussels-Cricklewood ...	7	7	3	1	6	2 45	Airco 9 G-EAUN (1h. 58m.)	A.4 (2), A.9 (2).
Totals for week ...	107	258	31	64	88			

\* Not including "private" flights.

† Including certain journeys when stops were made en route.

A.4 = Airco 4. A.9 = Airco 9 (etc.). B. = Breguet. G. = Goliath Farman. H.P. = Handley Page. N. = Nieuport. Sa. = Salmson. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Air Post of Banks; Air Transport and Travel; Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

### The Air Conference

It has been decided that the conference arranged by the Air Ministry shall open at the Guildhall at 10 a.m. on October 12, when Sir Frederick Sykes will read his paper on "Civil Aviation and Air Services." A luncheon will follow at 1 p.m., at which the Right Hon. Winston Churchill, M.P.,

Secretary of State for Air, will preside. A visit to the terminal aerodrome at Croydon has been arranged for the afternoon of October 13. The only other alteration to the programme as announced in our last issue is that Capt. F. S. Barnwell will read the paper on "Technical Aspects of Service and Civil Aviation" on September 13.



# THE AIR MINISTRY SEAPLANE (AMPHIBIAN) COMPETITION

As will be seen from the accompanying table, which is corrected up to September 27, good progress has been made in this competition, and both the Vickers-Viking and the Supermarine have practically completed their tests. The Fairey has been somewhat delayed, as, in coming down after one of the tests over water, a fitting of one of the centre struts was damaged. The damage to the Saunders "Kitti-

wake" has been found to be more serious than was anticipated. Repairs have been carried out, but it is feared that the machine will not be able to get to Martlesham in time to take part in the trials. There is a possibility, however, that the machine may fly to Martlesham and back to Cowes. The figures given in the table below are those published officially, but it will be observed that some of them are liable to correction:—

	Fairey.	Supermarine.	Vickers.
Machine .. .. .	Float Amphibian .. .. .	* Boat Amphibian .. .. .	Boat Amphibian .. .. .
Pilot .. .. .	Lieut.-Col. Nicholl, D.S.O.	Capt. J. Hoare .. .. .	Capt. Cockerell .. .. .
Engine .. .. .	450 Napier (Lion) .. .. .	350 Rolls-Royce "Eagle" .. .. .	450 Napier (Lion) .. .. .
High speed .. .. .	—	23/9/20, 82 knots .. .. .	8/9/20, 105.2 knots .. .. .
Slow speed .. .. .	20/9/20, 47.25 knots* .. .. .	23/9/20, 48 knots .. .. .	14/9/20, 45.25 knots .. .. .
Reliability .. .. .	17/9/20 .. .. .	21/9/20 .. .. .	7/9/20 .. .. .
Economy .. .. .	$\frac{W}{G} = 8.5^* .. .. .$	$\frac{W}{G} = 11.88^* .. .. .$	$\frac{W}{G} = 9.75 .. .. .$
Self-controlled flight .. .. .	—	22/9/20 .. .. .	7/9/20 .. .. .
Getting off sea .. .. .	23/9/20, 104 ft. .. .. .	22/9/20, 102 ft. .. .. .	22/9/20, 340 ft. .. .. .
Getting off land .. .. .	—	24/9/20, 60 ft. .. .. .	14/9/20, 177 ft. .. .. .
Mooring out (24 hrs.) .. .. .	26-27/9/20† .. .. .	24-25/9/20 .. .. .	20-21/9/20 .. .. .
Towing .. .. .	—	22/9/20 .. .. .	22/9/20 .. .. .
Taxi-ing .. .. .	21/9/20 .. .. .	22/9/20 .. .. .	20/9/20 .. .. .
Figure 8 .. .. .	23/9/20 .. .. .	22/9/20 .. .. .	20/9/20 .. .. .
Anchoring and picking up mooring .. .. .	23/9/20 .. .. .	24/9/20 .. .. .	20/9/20 .. .. .
Landing (over balloons) run .. .. .	—	27/9/20, 321 yds. .. .. .	27/9/20, 382 yds. .. .. .
Getting off and landing (rough water) .. .. .	—	22/9/20 .. .. .	22/9/20 .. .. .

\* These figures are liable to correction.

† Failed to do flight at conclusion.

## NOTICES TO AIRMEN

### Croydon Aerodrome : Aerial Lighthouse

1. AN aerial lighthouse is established at Croydon aerodrome which gives one flash every four seconds, thus:—  
Flash = One second. Eclipse = Three seconds.

2. It is in operation every night from sunset to sunrise.

3. Notice to Airmen No. 39 of April 14, 1920, is hereby cancelled.

(Notice to Airmen No. 99.)

### Lizard D.F. W/T Station Reopened

1. THE D.F. Wireless Station at the Lizard (Lat. 49° 59' 07" N., Long. 5° 12' 18" W.) is again operating.

2. Notice to Airmen No. 89 of August 24, 1920, is hereby cancelled.

3. Authority:—Admiralty Notice to Mariners No. 1444 of September 11, 1920.

(Notice to Airmen No. 101.)

### France : Flying near Airships Prohibited

1. PILOTS are warned that, by a French decree of August 26, 1920, aircraft in France are prohibited from flying near airships in flight.

2. The decree prescribes that no flying should take place within a minimum distance, in any direction, of 200 metres (approximately 220 yards) of such airship.

3. Authority:—French Notice to Airmen No. 14 of 1920.

(Notice to Airmen No. 102.)

### Government Aerodromes : Prices of Aviation Spirit and Oils to Civil Pilots

1. THE following prices for aviation spirit and lubricating oils issued at Government-owned aerodromes to civil pilots will be charged until further notice—

Per gallon, exclusive of container  
s. d.

Aviation petrol ... .. 4 7½

(If tins are taken away, 3s. per tin will be charged.)

Motor spirit, Grade 1 ... .. 4 3½

" " 3 ... .. 4 1½

(Prices in Scotland and Ireland, 1d. more in each case.)

Castrol R. lubricating oil ... .. 10 3

Oil, mineral, thick ... .. 4 8

" " thin ... .. 4 8

Castor oil, pure pharmaceutical ... .. 9 5

" " treated ... .. 9 7

2. No issue of aviation spirit will be made unless the Commanding Officer of the issuing unit is satisfied that the spirit is intended solely for flying purposes. Motor spirit will be issued only in cases of utmost urgency.

3. Notice to Airmen No. 23 of March 8, 1920, is hereby cancelled.

(Notice to Airmen No. 100.)

## ROYAL AERONAUTICAL SOCIETY NOTICES



Lectures.—The Right Hon. A. H. Illingworth, M.P., Postmaster-General, will take the chair at Sir Frederick Sykes's paper on "Civil Aviation" on Thursday afternoon, October 7.

The paper on "Airship Piloting" on Thursday, December 2, will be read by Maj. G. H. Scott, C.B.E., A.F.C.

Air Conference.—The paper on "Technical Aspects of Service and Civil Aviation" at the Air Conference will be read on behalf of the Society by Capt. F. S. Barnwell, Fellow, at 5 p.m. on the second day, Wednesday, October 13.

A very limited number of tickets for the conference have been received from the Air Ministry, which are in the first instance being offered to Fellows of the Society. If any technical member desiring to take part in the discussion on any particular paper will apply to the secretary, efforts will be made to arrange for a special ticket. Owing to the

extremely limited accommodation which is understood to be available, it is feared that it will be impossible to obtain tickets for any members other than those intending to speak.

Scottish Branch.—The Autumn Lecture Session of the Scottish Branch will open in the second week in October with a lecture by Maj.-Gen. Sir William Brancker, Member, on "The Most Recent Developments in Civil Flying," to be followed in the beginning of November by a paper by Air-Commodore H. R. M. Brooke-Popham, Chairman-Elect. During November the second series of technical lectures to the engineering students of Glasgow University has been arranged. Maj. J. S. Buchanan, Associate Fellow, will lecture on "Aircraft," and Squadron-Leader R. M. Hill, Associate Fellow, on "The Technique of Flight."

Arrears of Subscriptions.—It is desired to point out to Members who are in arrears with subscriptions that their names will not appear in the new List of Members.

W. LOCKWOOD MARSH,  
Secretary

# THE CORRECTION OF AEROFOIL CHARACTERISTICS FOR SCALE EFFECT

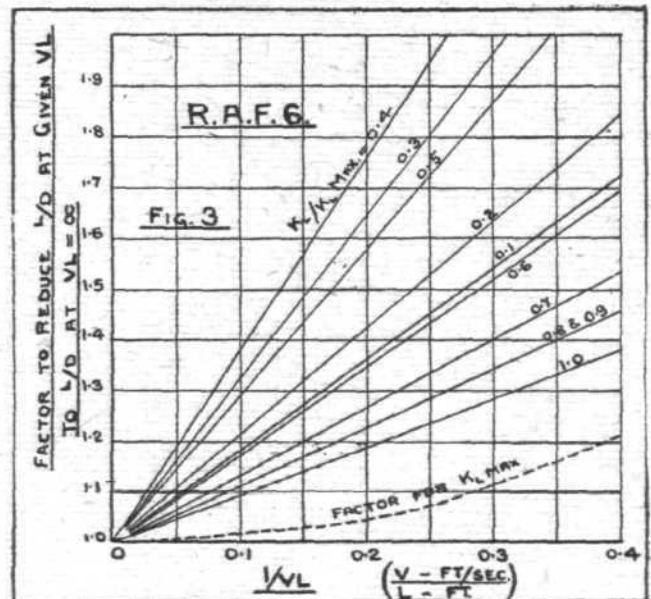
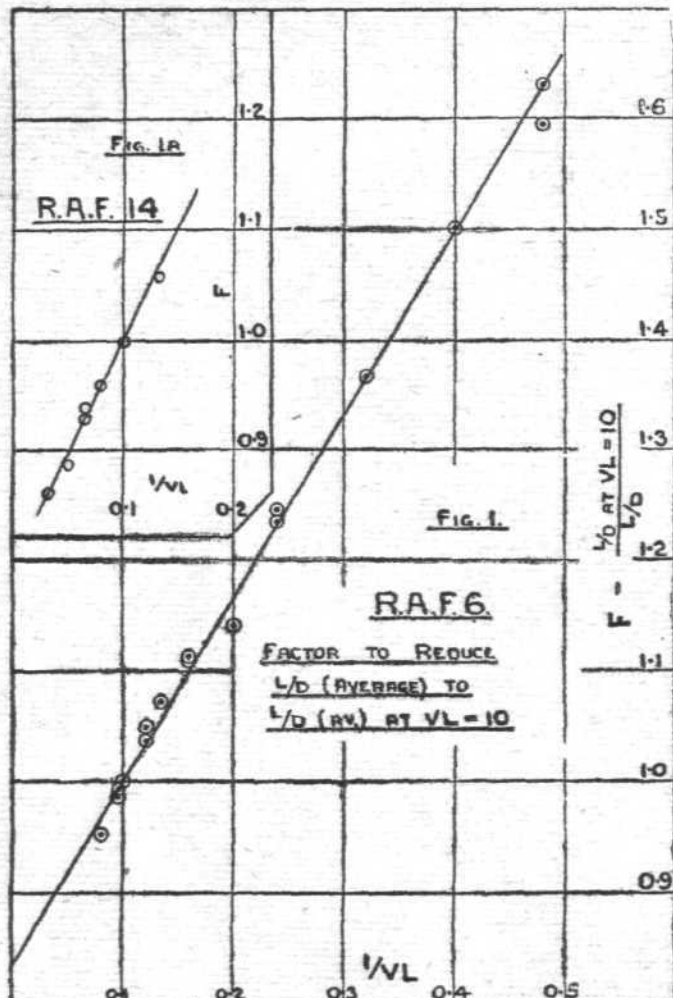
BY ALEXANDER THOM, B.Sc., A.R.T.C.

THE following investigation was carried out on the published results of experiments on R.A.F. 6 and R.A.F. 14 dealing with the speed-scale effect. It is an attempt to deduce a set of correction curves which will be consistent with all the experiments on models of the above aerofoils.

An examination of the experimental results shows that an increase in  $V_L$  usually results in an increase of  $K_L$  (lift

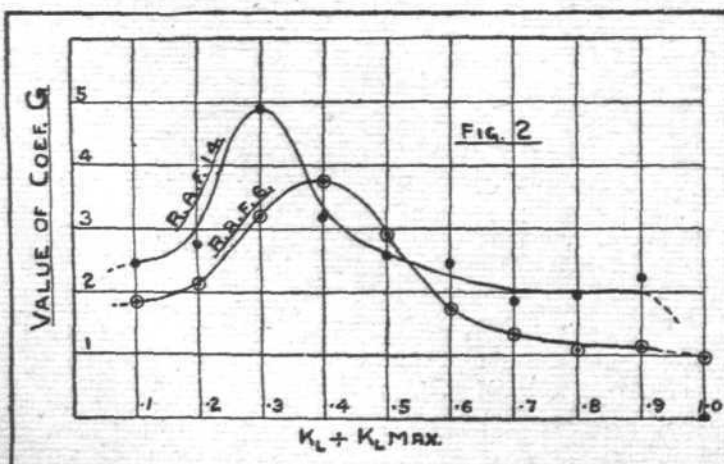
area of the  $L/D$  diagram (plotted on  $K_L$ ) was measured by planimeter up to the ordinate at  $K_L$  max. Then  $Av. L/D = \frac{\text{area}}{K_L \text{ max.}}$

The results are given in Table I. Since each of the experiments dealt with seems to have been carried out under slightly different circumstances, each would probably lead to a different value of  $Av. L/D$  at  $V_L = \infty$ . Consequently each experiment was treated separately in finding the correction factors. To avoid extrapolation until the end, the following method was adopted. The value of  $L/D$  at  $V_L = 10$  was found for each experiment by a preliminary plot.



Then the factor to correct each value of  $L/D$  to this was found. Fig. 1 and 1A show the results plotted on  $1/V_L$ . Since a straight line satisfies the points put,  $F = a + b \left( \frac{1}{V_L} \right)$ .

coefficient) and a decrease in  $K_D$  (drag coefficient). Consequently  $L/D$  has a larger percentage alteration than either  $K_L$  or  $K_D$ . Hence it was decided to obtain the corrections to  $L/D$  plotted on a  $K_L$  base. The corrections so obtained are directly applicable to the calculation of performance



curves if the base used is  $K_L \div K_L \text{ max.}$ , instead of angle of incidence.

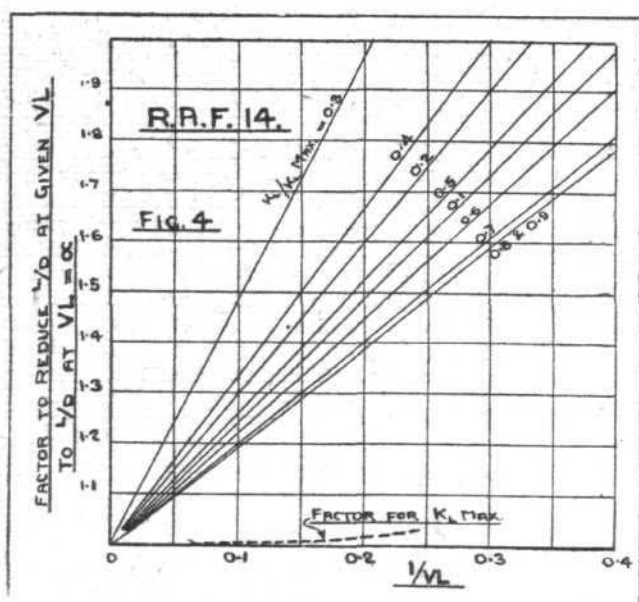
To eliminate experimental errors, and to find, if possible, the law which the correction follows, an average value of  $L/D$  was obtained for each value of  $V_L$  as follows. The

Source of experiment.	Aerofoil.	$V_L$ (ft. sec. units).	$1/V_L$	$A = \text{area of } L/D \text{ curve.}$	$K_L \text{ max.}$	$Av. L/D = A/K_L \text{ max.}$	$F = \frac{L/D \text{ at } V_L = 10}{L/D}$
Advisory Committee Report, 1912-13, p. 92	R.A.F. 6	2.08	.48	3.59	.470	7.63	1.593
		3.12	.32	4.58	.515	8.89	1.367
		4.16	.24	5.72	.587	9.74	1.248
		6.25	.16	6.71	.614	10.92	1.11
		8.34	.12	7.02	.600	11.70	1.038
Advisory Committee Report, 1913-14, p. 99	R.A.F. 6	10.4	.096	7.31	.597	12.24	0.993
		2.08	.48	3.51	.487	7.20	1.63
		4.16	.24	5.52	.583	9.48	1.24
		6.25	.16	6.36	.605	10.52	1.11
		8.34	.12	6.58	.590	11.15	1.050
Do.	R.A.F. 6	10.4	.096	6.96	.589	11.86	0.987
		2.5	.40	3.74	.493	7.58	1.50
		5.0	.20	5.84	.586	9.98	1.14
		7.5	.133	6.33	.598	10.59	1.072
		10.0	.10	6.92	.610	11.35	1.000
Reports and Memoranda	R.A.F. 14	12.5	.08	7.28	.610	11.94	0.951
		15.0	.067	7.20	.537	13.40	.940
		20.0	.050	7.66	.540	14.20	.887
		30.0	.033	7.91	.540	14.63	.861
		40.0	.025	—	—	—	—
Do.	R.A.F. 14	7.5	.133	6.46	.546	11.84	1.056
		10.0	.100	6.83	.546	12.50	1.000
		12.5	.080	7.11	.546	13.03	0.953
		15.0	.067	7.34	.546	13.46	0.929

The factor to obtain  $L/D$  at  $V_L = \infty$  is now

$$H = F/a = 1 + \frac{b}{a} \left( \frac{1}{V_L} \right) = \text{say } 1 + G/V_L$$





Figs. 1 and 1A give in this way, R.A.F. 6,  $G = 1.98$ ; R.A.F. 14,  $G = 2.60$ . Thus the average correction is higher for R.A.F. 14 than for R.A.F. 6.

It is now necessary to obtain the correction to  $L/D$  for various values of  $K_L$ .

To reconcile the various experiments the values of  $K_L$  were expressed as fractions of  $K_L$  max. Thus values of  $L/D$  were taken from the  $L/D$  diagrams for  $\frac{K_L}{K_L \text{ max.}} = 0.1$ .

These were treated in exactly the same manner as already described for the average value of  $L/D$ . This was repeated for  $\frac{K_L}{K_L \text{ max.}} = 0.2, 0.3$ , etc. The points on the diagrams corresponding to Fig. 1 naturally did not give such a fair line as the average values, but in every case a straight line was indicated.

The values of  $G$  obtained are shown plotted in Fig. 2. The average values of  $G$  from Fig. 2 are 2.02 and 2.62 agreeing with those already obtained. From Fig. 2 the final correction curves plotted in Figs. 3 and 4 were obtained. The correcting factor for  $K_L$  max. has also been added to these diagrams, as this is also required in the calculation of performance curves.



#### Deaths

Lieut. A. L. SHELDRAKE, 7th H.L.I. and R.A.F., who was previously reported missing on September 28, 1918, and is now presumed by the Air Council to have died on or since that date, was the elder son of Charles H. Sheldrake, Moniaive, Grahamshill, Airdrie, Lanarkshire.

Miss IMELDA MARY TRAFFORD, who was killed in the aeroplane accident near Hayes on September 25, was the youngest daughter of the late Mr. and the Hon. Mrs. E. S. Trafford, of Wroxham Hall, Norfolk, and sister of Mrs. Eric Rose, of 45, Green Street, Park Lane.

#### Married

S. LAURENCE CANNON, R.A.F., Castlebar, Co. Mayo, was married on September 6, at St. Paul's, Knightsbridge, to JOAN MARY IRELAND BLACKBURN, East Looe House, Canford Cliffs, Dorset.

HENRY FREDERICK OSBORNE FARRELL, late R.F.C. and R.A.F., Toronto, Canada, eldest son of Mr. H. S. Farrell, Petherton, Eltham, Kent, was married on July 7, 1920, at St. Andrew's Cathedral, Singapore, to ETHEL ANNIE NAYLOR, only daughter of Mrs. E. Naylor, Crowstones, Buxton, Derbyshire.

Capt. EDMUND PARFITT HARDMAN, D.F.C., R.A.F., son of the late John Bernard Hardman, K.S.G., of Edgbaston, and of Mrs. Hardman, 25, FitzGeorge Avenue, London, was

married on September 23, at Brompton Oratory, to Miss BETTY BUSHBY, youngest daughter of the late Percival White Bushby, of Torquay, and of the late Mrs. James, and step-daughter of Capt. James, R.N., of Braydon Hall, Minety, Wilts.

Flt.-Lieut. CECIL GEORGE MATHEW, R.A.F., second son of A. C. MATHEW, of Cranford, Church Crookham, Hants, was married on September 11, at All Saints' Church, London, N.W., to EMILY GEALE HESTER LOWRY, youngest daughter of the late Colonel C. M. ALEXANDER and Mrs. ALEXANDER, of Termon, Carrickmore, Co. Tyrone.

Capt. EUGENE NORGAR, R.A.F., of Pretoria, was married on September 9, at Oaklands Congregational Church, to Vi, youngest child of Mr. and Mrs. JOHN WIDGERY, of Uxbridge Road and South Molton.

OLIVER STURDY SINNATT, M.C., D.Sc., M.Sc., Professor of Aeronautical Science, R.A.F. Cadet College, Cranwell, was married on September 25, at St. Deny's Parish Church, Sleaford, to MARJORIE HELEN, only daughter of Mr. and Mrs. RANDALL, of Bridgend, Glamorgan.

#### To be Married

The engagement is announced between Major L. BLACKLEY (late R.A.F.), Wellington, N.Z., and CATHERINE MARION, only daughter of the late JOHN HUNTER-BROWN, of Milton, Dumfriesshire, and Mrs. HUNTER-BROWN, Hawkes Bay, N.Z.

#### Record Flight to Copenhagen

LIEUT. VAUGHAN FOWLER, who left London on the afternoon of September 22 with the air mail for Copenhagen, completed the flight, with one stop at Amsterdam, in 5 hours 40 minutes total flying time, beating the previous "record" of 6 hours 5 minutes.

#### Amsterdam-London and Back in One Day

MAJOR FOOTE recently demonstrated that by the Handley Page service it is possible to leave Amsterdam at 8.30 a.m., reach Cricklewood at 11.25, spend five hours in London, and starting on the return at 4.25 p.m., be back in Amsterdam at 7 p.m. At any rate that was his time-table on a recent occasion; not only so but the following morning he left Amsterdam at 11.35 a.m. and landed at Cricklewood at 2.35 p.m. with the mails. The same aerial limousine, with Rolls-Royce engine, was used throughout.

#### Air Mails in Spain

By way of explaining why the air mail between Barcelona and Palma, which was to have started in July, has not yet materialised the Spanish Government has issued a note stating that tenders for the service were limited to Spanish companies, with a view to promoting home industries; up to the present, however, no Spanish firm has come forward. The Spanish postal authorities refuse to accept any responsibility for the delay in starting the service.

#### Boy Mechanics for the R.A.F.

A REMINDER has been issued by the Air Ministry to local education authorities regarding the scheme for training boy mechanics from 15 to 16½ years of age. Nominations should now be made, and, in London, forms of application can be obtained from the L.C.C. Education Offices, Victoria Embankment, W.C. 2.

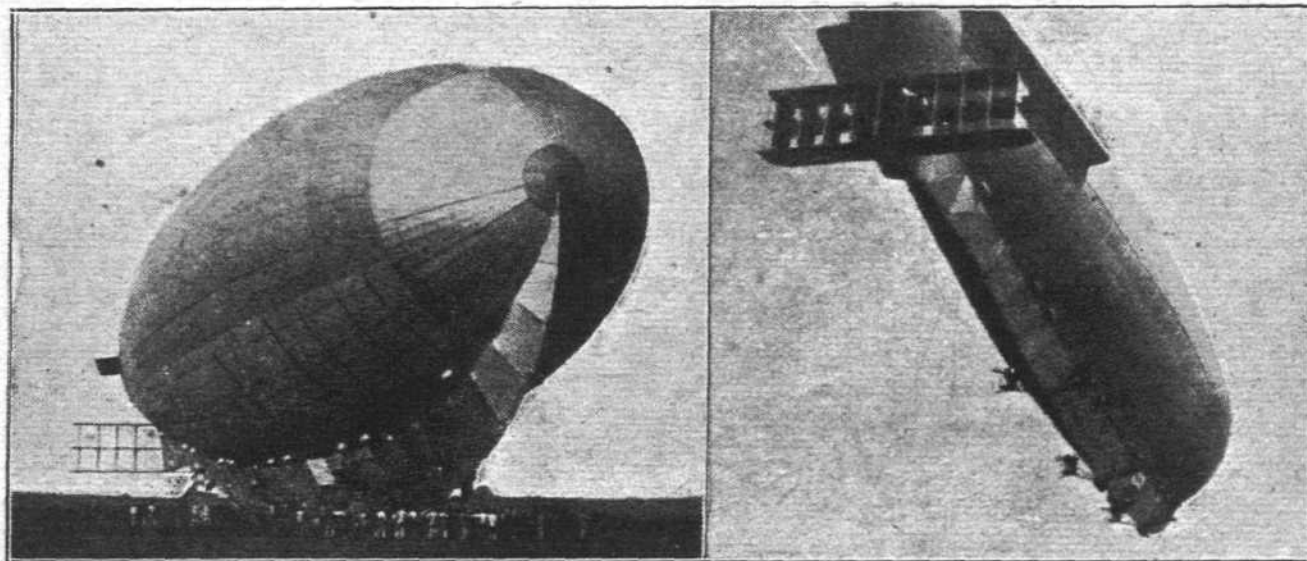
## THE NEW ITALIAN USUELLI SEMI-RIGID AIRSHIP

FROM the experience gained with a previous model—brief mention of which was made in our issue of June 24 last—a much larger and modified ship has been completed just recently by its inventor, Celestino Usueli, a wealthy Italian businessman, with the co-operation of Engineers Prassone, De Nobile and Col. Crocco.

The "Roma," as this new ship is named, is of the semi-rigid type, possessing several novel features, and differing constructionally from other semi-rigids in many respects. The results of the preliminary trials were, we understand, quite satisfactory, and according to the figures we have before us its performance appears to be very promising. As at present

stern, but unlike that of the Forlanini it is located outside the envelope, apex downward, flush with the bottom of the latter. The whole girder is divided up into a number of sections, or units, each of which is joined to the other by means of articulated couplings. By this means it is given a certain amount of flexibility in order that it may adapt itself to varying stresses.

In the earlier Usueli a car, containing the power-plant, crew, etc., was suspended from the keel, but in the "Roma" the cabin, for passengers, crew, etc., is contained within the girder itself, whilst the engines are mounted on the outer sides. The arrangement of the engines, of which there are six, is somewhat unusual; the first pair (port and starboard)



THE ITALIAN SEMI-RIGID AIRSHIP "ROMA": A three-quarter front view, and (on the right) in flight.

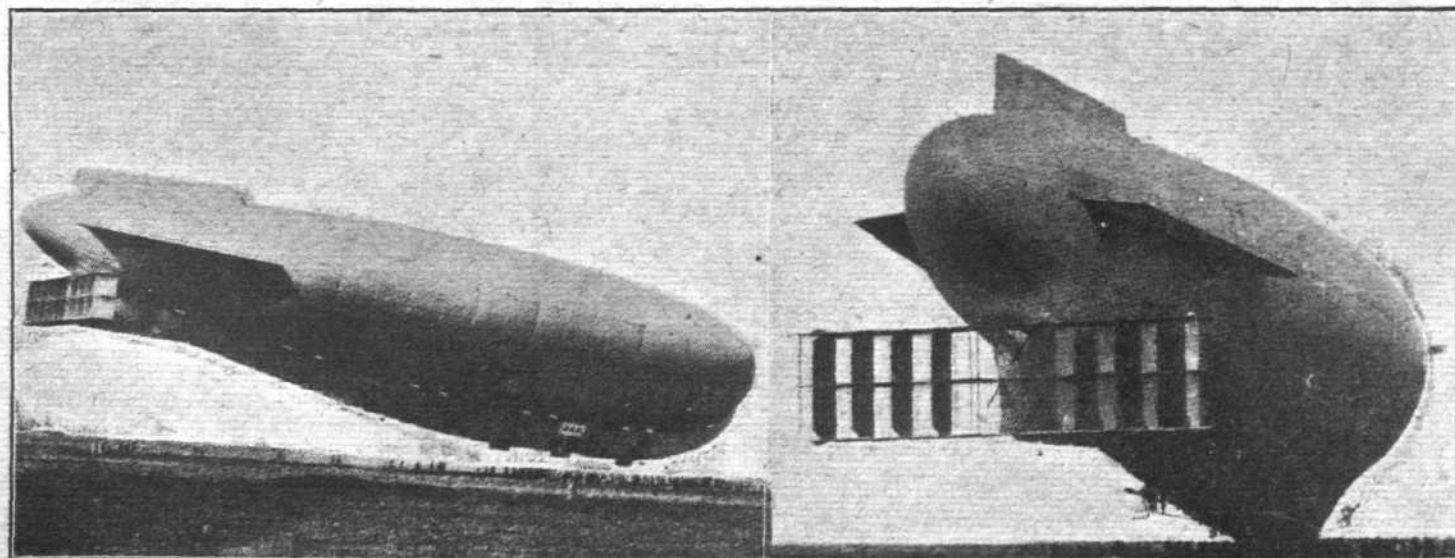
constructed the cabin accommodation is for 25 passengers, but we believe that it is intended to make the necessary alterations whereby this number will be increased to 100. For a semi-rigid the "Roma" is comparatively large, being 410 ft. in length and about 83 ft. in diameter, whilst the capacity is 1,200,000 cu. ft. The total weight of the ship is round about 37 tons, 19 tons of which includes fuel, ballast, crew, etc. With fuel and ballast for 600 miles the actual useful load available comes out at about 10 tons, which is certainly remarkably good. The maximum speed of the "Roma" is 80 m.p.h., and the cruising or economical speed is 56 m.p.h., giving a range of action of 3,000 miles.

The principal feature of the Usueli airships is the rigid keel. As in the case of the Forlanini airships, this consists of a triangular-section girder framework extending from nose to

of engines have their axes inclined at an angle of 12 deg. over the diametrical plan of the ship, the second pair have an inclination of 10 deg. and the third pair are parallel to the line of flight. The object of this arrangement is to prevent interference of the slip-streams between each pair of engines. The engines are 400 h.p. 12-cyl. Ansaldo V-type, driving directly 11 ft. 6 in. propellers.

The envelope, which is of fair streamline shape, is divided into 12 gas compartments, and has six ballonets. It is slightly bi-lunated, somewhat after the fashion of the Astra-Torres airships. It will be seen that the front of the keel curves up to the extreme tip of the nose of the envelope, where a large braced cupola serves to stiffen the front of the ship and prevent it from being blown in at high speeds.

As is general practice in Italian airships, the control surfaces



THE ITALIAN SEMI-RIGID AIRSHIP "ROMA": Side and rear views.



are of the multiplane type, and consist of three superimposed horizontal planes with elevator flaps hinged to each and eight vertical surfaces and rudders, the whole being mounted on the rear of the keel. In addition two horizontal and one vertical fins are mounted on the stern of the envelope. Two sets of controls are provided within the keel, one fore and one aft.

The principal characteristics of the "Roma" are:—

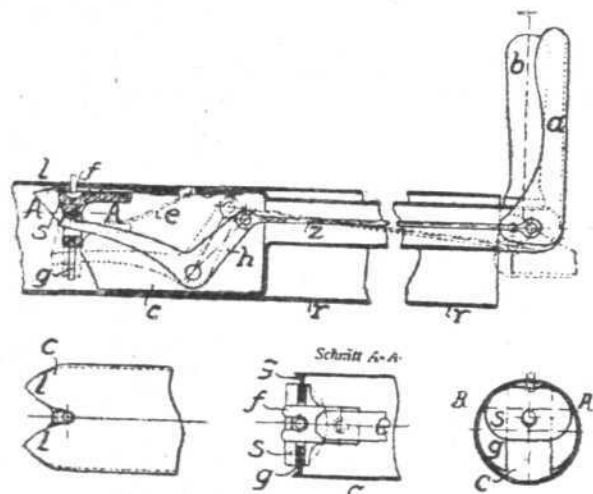
Overall length	...	...	410 ft.
Diameter	...	...	82 ft. 6 ins.
Height	...	...	90 ft. 3 ins.
Capacity	...	...	1,200,000 cu. ft.
Weight (fully laden)	...	...	37 tons.
Disposal lift	...	...	19 tons.
Max. speed	...	...	80 m.p.h.
Power-plant	...	...	6 x 400 h.p.

## RIVETING OF NARROW TUBES

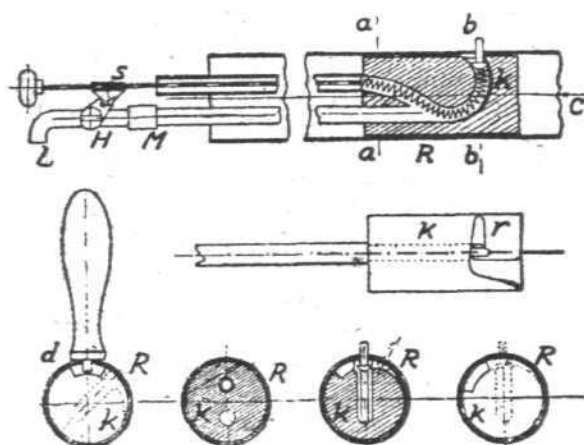
THE following description of a method of riveting narrow tubes from the inside, by Dr.-Ing. Theobald, is taken from the German journal *Luftfahrt* of July 1, 1920.\*

In aircraft construction many kinds of tube connections or connections of struts with tubes are made by means of riveting. This involves the insertion of the rivet into the rivet hole from the inside, and thus the rivet must be passed

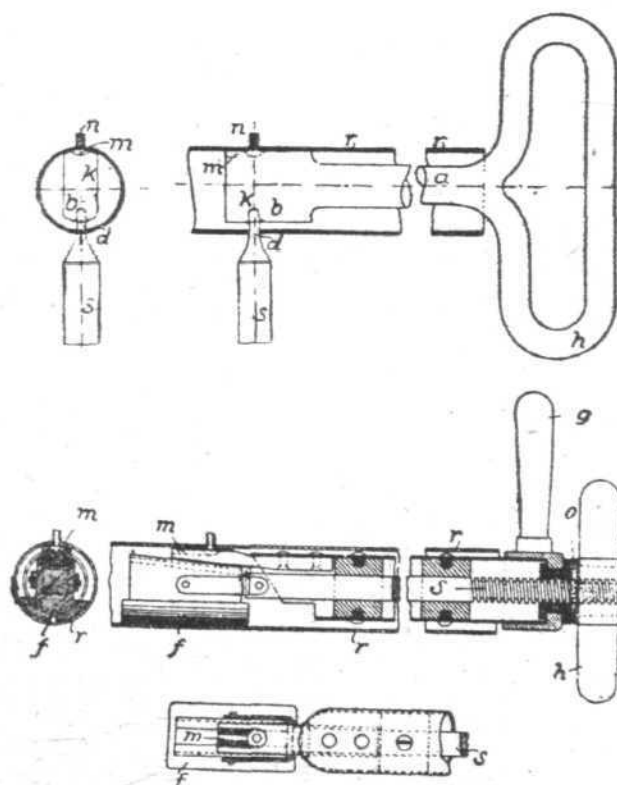
Figs. 1-4 show such a contrivance for fixing rivets. It consists of a head *c*, tubular in shape, and of a width corresponding to the diameter of the tube to be riveted, which is pushed forward to the required position for the rivet by a rod, which is also tubular. A forked slot between the lugs *ll* permits of the adjustment of the tool on to a mandrel passed through the rivet hole. A pusher *S* is fitted in the



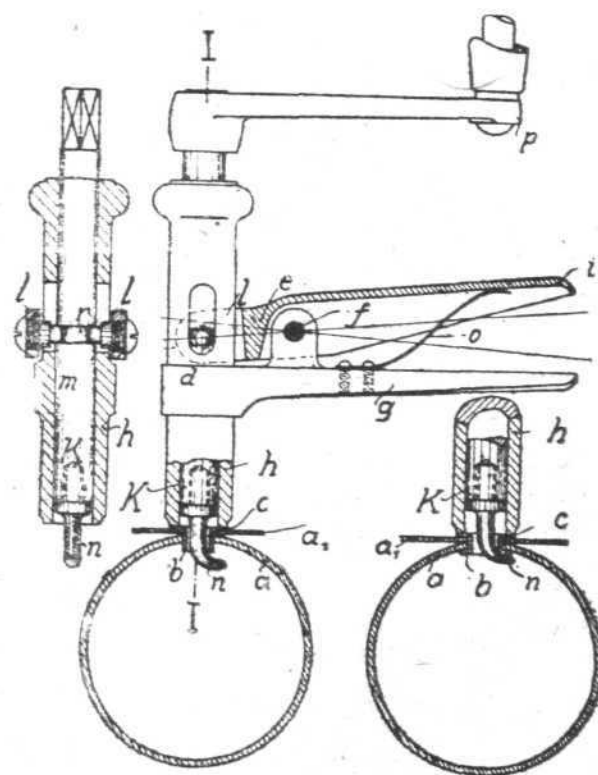
Figs. 1 to 4.



Figs. 10 to 15.



Figs. 5 to 9.



Figs. 16 to 18.

through the tube to its position. This is a difficult process, as often these tubes are only a few centimetres in diameter, and very delicate devices must be used to accomplish it.

Recently the Airship Construction Firm Schütte Lantz at Mannheim-Rheinau have produced a set of tools whereby the rivets can be passed through and fixed in narrow tubes.

\* Issued by Controller of Information.

head *c* on to the perpendicular ribs *gg*. This takes the head of the rivet in a groove, into which it is pressed by a forked spring plate *f*. The pusher *S* can be moved upwards by means of a bell crank lever *h*, the horizontal arm of which fits into a slit in the pusher, and which is generally kept down by a leaf spring *e*. In this position the rivet is inserted in the groove outside the tube, then the tool is pushed into

the tube, and by means of the forked slot and the above-mentioned mandrel it is brought to the exact position for the rivet. The handle *b* on the rod is arranged parallel to the rivet, and thus the accurate direction of the tool is facilitated. When the tool is in the correct position as regards the rivet hole, by means of pressure on the spoon-shaped hand lever *a* on the handle *b*, transmitted through tension rod *z*, the lever *h* is brought into line with the hole so that the *S* pushes the rivet into the rivet hole. The rivet is then held firmly from the outside, and when the tool is withdrawn by depressing the leaf spring *f*, it slips out of the groove of pusher *S* and is left behind in the rivet hole.

The tool described only serves to place the rivet in the rivet hole; a second tool is necessary to form a supporting block whilst actually riveting; this is shown in Figs. 5 and 6. This tool consists of a block *k* with straight sides rounded off at the top and bottom, which is pushed into the tube to be riveted on a rod *a* by means of the handle *h*. The top of the block *k* contains a semi-circular groove *m*, which lies under the head of the rivet *n*; on the under side there is a hole *b*, over the lower rivet hole diametrically opposite the upper one, in which the point *d* of a mandrel *S* is inserted in order to keep the block steady whilst riveting is in progress. The tail of the rivet can then be hammered down.

It is necessary to secure the block from the outside because, as the rivet head is already in position, the block cannot be made of such a size as completely to fill out the tube *r*, but must be made smaller by the height of the rivet head. The arrangement shown in Figs. 7-9 renders the securing of the block from the outside unnecessary, in that the block is divided into two parts which can be pressed against the walls of the tube, as the surfaces in contact are wedge-shaped. The smaller upper section of the block, as before, contains the groove *m* for the rivet head, and is situated at the further end of a tubular rod, which is inserted into the tube *r* by means of the handle *g*.

The larger bottom section of the block *f* is rounded off underneath to fit into the tube, and is connected by means of a joint to a spindle inserted in the rod. A thread *s* is cut at the other end of the spindle on which a nut *o* engages. This nut is connected with the hand-wheel *h*, by means of which the position of the spindle can be altered.

After the rivet has been inserted in its hole, the tool is inserted into the tube and the groove *m* is forced under the rivet head, the hand-wheel *h* is turned until the inclined surface of the lower section of the block *f* firmly fixes the upper section of the block against the head of the rivet. Then the tail of the rivet can be clenched.

Figs. 10-15 show a skilful contrivance for combining the insertion of the rivet into its hole and the support of the head whilst riveting. The means by which the rivet is brought into position is in this case some elastic medium, compressed air for example, which forces the rivet through a slot into the rivet hole. The tool consists of a head *k*, which contains a

curved slot. The front end of this points upwards out of the head piece, and is widened at the mouth, so that it consists on one side in a forward divergent longitudinal groove and on the other in a convergent and flattened lateral groove. The longitudinal groove, similarly to the device shown in Figs. 1-4, serves to fix the tool in position relative to the rivet hole by means of an adjustment mandrel; the lateral groove serves to raise the head and as a support when riveting. The above-mentioned slot branches out at the rear into two slots, the lower one of which is connected to a tube through which the rivet is led, whilst the upper one is connected to a second tube containing a flexible tappet. When the tool is introduced so far into the tube that the rear wall of the longitudinal groove strikes against the adjustment mandrel and *d* spaces the latter, a rivet is placed in the chamber *m*, with its shank pointing forwards, and by pushing forward the tappet *S*, which is connected with the aircock *h*, compressed air is let in behind the rivet and the latter is thus shot into the rivet hole. The flexible tappet, which ends in a spiral spring and lies in the upper tube, is then again pushed forward, and thus presses the rivet into its hole. If the tool is then turned to the left the tapering lateral groove *r* presses the rivet head firmly against the wall of the tube, and the head *k* then serves as a supporting block when riveting.

The devices hitherto described for introducing the rivet into the tube from the inside, and supporting it from the outside whilst the tail is being clenched fail in the case either of very long tubes or of tubes closed at the ends. Professor H. Junkers of Dessau conceived the idea of using hollow rivets in such cases, inserting these from the outside into the inaccessible interior, and clenching the locking head inside the tube from the outside. A peculiar device had to be contrived for this purpose (Figs. 16-18). It consists of a tubular supporting block *h*, in which the riveting tool *k* can be pushed and turned. The latter has at its upper end a square neck acting as a socket for a crank handle *p*. The ends of the forked arms *e* of a plier-shaped part *d* engage in a groove *r* in the centre of the riveting tool, the lower arm *d* of which is fixed to the supporting block *h*. Handles *i* and *g*, usually kept apart by a spring *O*, serve to raise the riveting tool, which carries a hook *n* at its lower end. If, for instance, a strut or similar part *a* has to be riveted to the tube *a*, the hollow rivet *b* is so inserted from the outside in the rivet hole that its head *c* rests on the strut. Now, whilst inclining the entire device, the hook *n* is inserted through the hollow rivet, the supporting block *h* is placed upon the rivet head, and by compressing the plier handles *ig* the riveting tool *k* is raised and thus the hook *n* is pressed against the tail of the rivet shank from the inside. If the riveting tool is now simultaneously turned by means of the crank handle *p*, the tail of the rivet is pressed down evenly and forms a locking-head inside the tube. If the plier handles *ig* are released, then, by again inclining the whole device, the hook *n* can easily be removed from the inside of the tube.



### The Schneider Cup

AFTER the withdrawal of the French and British challenges for the Coupe Jacques-Schneider, there only remained the Italian team, and the recent works upheaval in that country seriously interfered with the intentions of competitors. As a matter of fact the only competitor to undertake the navigability test on September 18 was naval Lieut. Bologna on a Savoia. He attempted to fly over the course on the following day, but owing to the squally wind gave up after covering five rounds. He, however, made another attempt on September 22, and then covered the full course of 375.560 kiloms. in 2 hr. 10 min. 35 secs. He was declared the winner of the trophy, which therefore remains in Italy for another year.

### A Controller of Aerodromes

It is understood that Brig.-Gen. F. Festing has been appointed Controller of Aerodromes and Licensing at the Air Ministry, and has already taken up his duties. It may be recalled that after the Armistice Gen. Festing left the Royal Air Force to become associated with some of Mr. G. Holt Thomas's enterprises.

### No. 4 Squadron R.A.F.

THE second annual dinner is to be held on October 16 at 8 p.m. at the Savoy Hotel. Air-Commodore Longcroft, C.M.G., D.S.O., will preside, and it is hoped that Air-Marshal Sir Hugh Trenchard, K.C.B., D.S.O., and Group-Captain Ludlow-Hewitt, C.M.G., D.S.O., will be the guests of the evening. Those wishing to attend should forward a remittance for £2 10s., to cover cost of dinner and wines, to Lt.-Col. Thomas Carthew, at 2, Mitre Court Buildings, Temple, E.C.4.

### Officers' Medal Rolls

MEDAL ROLLS of those who have served in the Royal Air Force and have qualified for the British War and Victory Medals are in course of preparation.

Demobilised and invalided officers of the R.A.F.—unless they have already done so—are requested to write immediately to the Secretary, Air Ministry (S. 7, Medals), Kingsway, W.C. 2, for the necessary form of application (A.M. Form 618). No officer's claim will be considered until this form has been returned completed to the Air Ministry.

Medal Rolls in the case of airmen are being prepared from their documents at the Royal Air Force Record Office, and at present no application on their part is necessary.

### R.A.F. to Use a Zepp.

It is understood that the "L. 71," one of the Zeppelins surrendered by Germany to Great Britain, is to be placed in commission by the Royal Air Force, when it will be stationed at Howden, near Hull. At present it is undergoing a thorough and detailed examination at the airship experimental station at Pulham in Norfolk.

### The Flight to Bucharest

THE De H. machine which left Cricklewood on September 12 arrived safely at its destination at Bucharest on the afternoon of September 16, after two days' delay at Belgrade, caused partly through having landed on a military aerodrome without a permit, and partly through the difficulty of obtaining petrol. The actual flying time was 16 hours.

Some difficulty was experienced in finding petrol at Nuremberg necessitating a stay overnight, and at Vienna the radiator needed a little attention, causing a further delay.



# AIRISMS FROM THE FOUR WINDS.

THE Wilbur Wright Memorial recently unveiled at Le Mans, France, is a standing reminder of the great "Birdmen" through whose experiments man was in the first enabled to ride the wind. It is well, therefore, that, for the benefit of future generations, the facts recorded on this monument, associated with early aeronautical research, should be scrupulously accurate. In this connection a strong protest comes from Mr. John Jay Ide, writing from Paris, to the following effect:—

"I desire to call attention to the misspelling of a number of the names of the pioneers of aeronautics carved on the base of the monument to Wilbur Wright recently unveiled at Le Mans, France. Some of the more flagrant cases are given below, with the correct spelling in parentheses:—

- "Esnault Pelleterie (Esnault Pelterie).
- "Wilhem Kress (Wilhelm Kress).
- "Dupuis de Lome (Dupuy de Lôme).
- "Weham-Stringfellow (Wenham and Stringfellow).
- "Lieutt. Gelfridge (Lieut. Selfridge).
- "Cecile Grace (Cecil Grace).

"In many instances the names that happen to be correctly spelled are incomplete, i.e., only the final names are given.

"It would be interesting to learn what jury passed the names inscribed on this monument, and how such blunders, which may well cause confusion in years to come, were made. It is stated on the base that the monument was presented by a Mr. Beaumont and a number of citizens of Dayton, Ohio, U.S.A."

MR. IDE has indeed justification for his protest, and it is to be hoped steps will be at once taken to set right these wrongs on the Wright memorial.

IN spite of the frowning down which Mr. J. L. Cope encountered from the Royal Geographical Society in connection with his Antarctic Expedition, as Commander of the expedition Mr. Cope has in no way been discouraged. A start has been made, and the advance guard is already on its way to its base at Port Stanley, in the Falkland Islands. Mr. Cope, who was a surgeon with Sir Ernest Shackleton's last expedition, left London last Monday to join up at Port Stanley with the rest of the party, consisting of Capt. Wilkins, M.C., Mr. W. T. Bagshawe, geologist, Mr. M. C. Lester, navigator and surveyor to the party, and a seaman of the Royal Navy.

From the Falkland Islands the expedition will be taken by a whaling vessel to the Weddell Sea, and there landed on the ice during January. The party hope to survey hitherto unexplored regions, but no attempt will be made to reach

the Pole, the aims of the expedition being purely geographical and biological. A cinematograph camera is included in the equipment of the expedition. At the end of 18 months or so the party will return to England, by which time a specially-built ship and a large aeroplane will be ready for a further expedition, which is expected to be of five years' duration, during which that "dash" for the Pole is to be attempted by aeroplane.

FROM news to hand from Paris, M. Michelin and M. Basil Zaharoff have each subscribed 100,000 francs, with a promise of a further 400,000 francs a-piece when the total subscriptions reach two million francs, in connection with a movement for the creation of a French fleet of commercial aeroplanes, which could be utilised for defensive purposes in the event of war.

PATROLS by U.S. naval seaplanes have now in practice proved the value of aircraft for spotting shoals of fish. Chesapeake fishermen, with whom these patrols have been operating, have as a result reaped a rich harvest, the biggest hauls on record having been made. They have been guided to immense shoals of fish almost daily.

LOOKS as if the Italian "Reds" who, uninvited, took on the task of running the Italian engineering works without the co-operation of the owners have speedily got fed up. No cash at the end of the week has set them thinking so hard that they have already invited the much-scorned owner to take over his job again. Amongst the undertakings so experimented with are the Ansaldo Aviation Works. Hardly surprising!

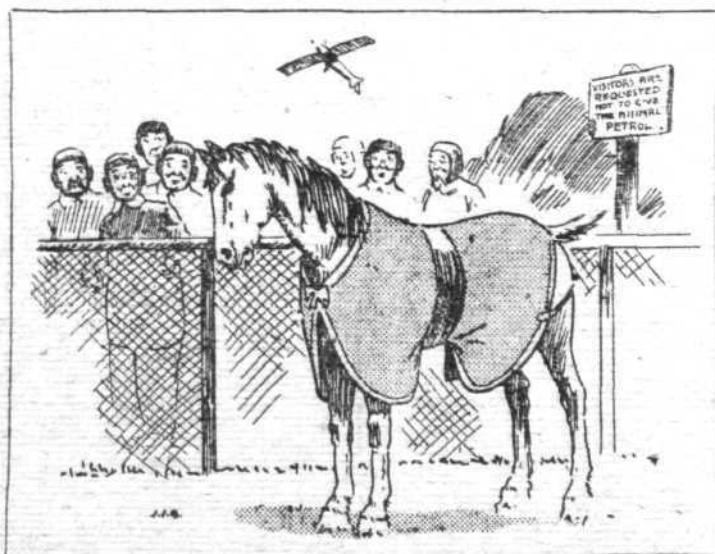
ONCE again there is for record a fatal accident to an "air acrobat" in the mishap to Myron L. Turney, a former military pilot, who fell 500 ft. and was killed at the Detroit State Fair Grounds while performing, before a crowd of about 200,000 people, fool tricks for cinema purposes similar to those enacted by Lieut. Locklear, whose death under almost identical conditions we referred to a few weeks back. In an attempt to catch a rope ladder on which he was to climb from one plane to another flying above him, he missed his hold, with the usual result.

And again we protest against aviation being prostituted in this manner for the edification of the silly "guys" who live at "the pictures." Such films should be censored out of existence, and buried with the type of film which is responsible for many of the crimes today which are becoming, by emulation, more and more frequent amongst the impressionable and irresponsible youth of both sexes. Is there a censor of films? If so, let him sit up and take notice quickly.

DR. GEORGE CLARKE SIMPSON, the new Director of the Meteorological Office in London, is an advanced believer in the twinship of Wireless and Aviation. Under his guidance the science of weather-forecasting is likely to be carried many steps further. In fact, he looks forward to the not far distant time when, with the aid of wireless and the reports of pilots, it will be possible to forecast with great accuracy a week's weather ahead. Which all makes for more settled and stable flying conditions.

## King Victor Inspects "L.61"

PREVIOUS to taking a trip in the new Italian airship "Roma," King Victor of Italy inspected "L.61," the Zeppelin recently surrendered by Germany to Italy. It is reported that previous to making the voyage to Italy, the "L.61" carried 85 passengers during a trial trip lasting 10 hours at a height of 2,500 metres. The journey from Friedrichshafen to Rome took 12 hours, and to cross the Alps the airship had to rise to 3,500 metres. On arrival at Rome it was found that the shed was only 15½ ins. higher than the airship, but the vessel was docked without mishap.



**BOXING DAY AT THE ZOO, 1999:** The horse (reputed to be in common use in Edwardian days) is still the most popular denizen with the bird-men

# THE ROYAL AIR FORCE

London Gazette, September 14

## Permanent Commissions

The name of Squad. Ldr. H. Gordon-Dean, A.F.C. (A.), is as now described, and not H. G. Dean, as stated in *Gazette*, Aug. 1, 1919.

The classification of Flight Lieut. L. P. Morgan (T.) is as now described, not (Ad.) as stated in *Gazette*, Aug. 1.

## Short Service Commissions

The following officers are granted short service comms. in the ranks stated, with effect from the dates indicated, retaining their seniority in the substantive rank last held by them prior to the grant of this commn., except where otherwise stated:—

*Flight Lieut. (from Squadron Leader).*—H. S. Shield, M.C.; Sept. 7.

*Flight Lieut.*—C. Hanson-Abbott; Sept. 13. A. S. C. MacIare, O.B.E., M.C., A.F.C.; Sept. 9. D. McLaren (Med.); March 31 (substituted for notification in *Gazette*, April 20. G. H. H. Maxwell (Med.); Aug. 24.

*Flying Officers.*—F. E. C. Benstead; Sept. 10. C. Hallawell; Aug. 28. R. N. Hesketh; Aug. 26. G. R. Hicks, D.F.C.; Sept. 1. A. F. James; Sept. 1. R. H. McC. Sheppard; Sept. 1. S. E. Sutcliffe; Sept. 2. A. C. Smith; Sept. 14. S. H. Ware; Aug. 30. H. W. Westaway; Aug. 27. C. S. Whellock; Sept. 3.

*Flying Officers (from Pilot Officers)* (with seniority of dates indicated).—C. O. Anson; Sept. 7. C. E. Durant; Sept. 13. P. W. Lingwood; Sept. 1. J. Spooner, M.M.; Aug. 27. S. H. H. Swanton; Sept. 11.

*Note.*—Flight Lieut. Shield will be placed at the head of the list of Flight Lieuts., and will retain seniority relative to officers who have been similarly gazetted to short service comms. in a lower rank than their previous substantive rank, in accordance with his previous position on the gradation list.

The notification in *Gazette*, Dec. 5, 1919, appointing Flying Officer V. W. Helps (A. and S.) to a short service commn. is cancelled.

## Seconding

The following officers of the Royal Navy are granted temp. comms. in the ranks stated on seconding to the R.A.F. for three years:—

*Flying Officers (Hon. Flight Lieuts.).*—G. C. L. Dalley (Lieut., R.N.), G. S. N. Johnston (Lieut. R.N.), W. A. Elliot (Lieut., R.N.), E. J. Nightingale (Paymr.-Lieut., R.N.), C. M. E. Gifford (Lieut., Act., R.N.); Sept. 6.

*Flying Officer.*—A. W. Scott (Sub-Lieut., R.N.).

The following Army officers are granted temp. comms. as Flying Officers on re-seconding to the R.A.F. for four years, retaining their original seniority in that rank:—R. H. Wathes (Lieut. Notts and Derby R.), A. A. Ward (Lieut., R.F.A.), J. R. I. Scambler, A.F.C. (Lieut., R.F.A.), E. M. Drummond (Lieut., R. Higs.); Sept. 6.

## Flying Branch

Lieut. G. F. Fry to be Lieut. (A.) from (O.); Feb. 15, 1919 (substituted for *Gazette*, Aug. 1, 1919).

*Pilot Officers to be Flying Officers.*—S. T. R. Lloyd; Oct. 26, 1918 (substituted for *Gazette*, March 23, 1919). A. Morrison; Feb. 13.

*Pilot Officer A. F. Adams* to be Act. Flying Officer whilst empld. as Flying Officer; Aug. 1, 1919, to Sept. 30, 1919.

P.F.O. H. J. Dyer (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (A.); Oct. 12, 1918.

The following Lieuts. relinquish their R.A.F. comms. on appt. to T.F., and are permitted to retain their rank:—T. R. Evans; May 31 (*Gazette*, April 29, 1919, to stand). H. E. Chapman (*Gazette*, Jan. 21, 1919, to stand). G. G. Macphie (*Gazette*, Aug. 29, 1919, to stand). L. H. McRobert (*Gazette*, Nov. 25, 1919, to stand). J. G. Mair (*Gazette*, Jan. 24, 1919, to stand). J. W. Sanders (*Gazette*, July 15, 1919, to stand). F. B. Wilkins (*Gazette*, March 14, 1919, to stand).

The following Sec. Lieuts. (Hon. Lieuts.) relinquish their R.A.F. comms. on appt. to T.F., and are permitted to retain rank of Lieut.:—G. H. Power (*Gazette*, Feb. 7, 1919, to stand). R. L. Sweet, M.C.

Sec. Lieut. S. G. Hollingsworth relinquishes his R.A.F. commn. on appt. to T.F., and is permitted to retain his rank (*Gazette*, June 4, to stand).

*Transferred to Unemployed List.*—Lieut. C. L. Childs; March 2, 1919 (substituted for *Gazette*, March 21, 1919). Lieut. T. R. Evans; April 10, 1919 (substituted for *Gazette*, April 29, 1919). Sec. Lieut. G. I. Thomson; June 30, 1919 (substituted for *Gazette*, July 18, 1919). Lieut. L. A. S. Harris, Lieut. H. C. Price; Aug. 31. Lieut. D. E. Spalton; Sept. 9.

Lieut. D. W. Hardy relinquishes his R.A.F. commn. on account of ill-health contracted on active service, and is permitted to retain his rank; Sept. 7.

Sec. Lieut. H. H. Bracher is antedated in his appt. as Sec. Lieut. (O.); July 19, 1918.

## Administrative Branch

Sec. Lieut. A. Jukes to be Sec. Lieut. from (T.); Oct. 15, 1918 (substituted for *Gazette*, July 27).

Lieut. A. Cattanch relinquishes his R.A.F. commn. on appt. to T.F., and is permitted to retain his rank, *Gazette*, Oct. 24, 1919, to stand.

Sec. Lieut. (Hon. Lieut.) J. A. Bonnyman, M.B.E., relinquishes his R.A.F. commn. on appt. to T.F., and is permitted to retain rank of Lieut. (*Gazette*, Sept. 12, 1919, to stand).

*Transferred to Unemployed List.*—Lieut. G. Wilson; Aug. 16. Lieut. G. T. Cain; Aug. 31. Lieut. (Hon. Capt.) W. T. Calthorpe; Sept. 1.

## Technical Branch

Sec. Lieut. P. F. Barrett to be Lieut. (Grade B); May 13, 1919. Pilot Officer G. Wilson to be Flying Officer (Grade A); Oct. 1, 1919.

*Transferred to Unemployed List.*—Lieut. C. Galvayne; May 1, 1919. Lieut. M. A. Doyle; Aug. 1, 1919 (substituted for *Gazette*, Feb. 3). Lieut. W. F. Chauncey; Feb. 7. Lieut. F. A. Benfield, D.S.M.; Aug. 20.

Notification in *Gazette*, Mar. 30, concerning Pilot Officer W. G. Fairley is cancelled.

## Medical Branch

Capt. (Act. Lieut.-Col.) J. J. C. Hamilton is transferred to Unemployed List; Sept. 1.

## Chaplains' Branch

The full names of the following chaplains are as now described, and not as stated in *Gazette*, Aug. 13:—Rev. William Moffat, M.A., B.D., Rev. George Anthony Davies, Rev. Denis Francis Blackburn, Rev. Joseph Frith, Rev. Charles William Hall.

London Gazette, September 17

## Permanent Commissions

Flight-Lieut. J. H. Norton, M.C., D.F.C., resigns his permanent commn.; Sept. 1.

## Flying Branch

Flying Officer H. L. Rough, D.F.C., is placed on the half-pay list (Scale A.), from Dec. 3, 1919, to Mar. 3 (substituted for *Gazette*, Sept. 7).

Lieut. W. E. Green, D.F.C., relinquishes his R.A.F. commn. on appt. to the T.F., and is permitted to retain his rank (*Gazette*, Feb. 3 to stand).

Sec. Lieut. (Hon. Lieut.) R. Simpson relinquishes his R.A.F. commn. on appt. to the T.F., and is permitted to retain his rank of Lieut. (*Gazette*, Aug. 22, 1919, to stand).

*The following relinquish their R.A.F. comms. on ceasing to be employed.*—Lieut. E. W. Watts; Aug. 24, 1918. Lieut. E. A. Sewell; Feb. 22, 1919 (substituted for *Gazette*, Feb. 27). Sec. Lieut. J. Bolton (*Gazette* April 29, 1919, to stand).

*The following are transf'd. to Unemployed List.*—Sec. Lieut. H. Jowett; Jan. 25, 1919. Sec. Lieut. R. J. Chapman; Jan. 27, 1919. Lieut. G. F. Dell; April 30, 1919 (substituted for *Gazette*, June 3, 1919, and Aug. 15, 1919). Lieut. F. J. Cunningham; May 25, 1919. Lieut. F. E. Gritton; Oct. 10, 1919 (substituted for *Gazette*, Oct. 24, 1919). Lieut. J. McNamara, D.C.M.; Oct. 15, 1919.

Lieut. W. R. Moscrip relinquishes his R.A.F. commn. on account of ill-health caused by wounds, and is permitted to retain his rank; Sept. 10.

## Administrative Branch

Sqdn. Leader. G. Blatherwick is placed on the half-pay list (Scale B.); May 19 (substituted for *Gazette*, May 18).

Lieut. H. H. Bunn (R.D.C., T.F.), relinquishes his temp. R.A.F. commn. on return to Army Duty; April 30, 1919.

Lieut. J. E. Carter is transf'd. to the Unemployed List; Sept. 1.

## Technical Branch

*The following are transf'd. to the Unemployed List.*—Sec. Lieut. W. Cox; Jan. 11, 1919 (substituted for *Gazette*, Jan. 24, 1919 (Ad. Branch)). Lieut. P. G. Robinson; Jan. 16 (substituted for *Gazette*, Jan. 30 and July 30). Lieut. H. Edwards; Sept. 7.

Lieut. W. C. Ibbett (Lieut. Gen. List) relinquishes his temp. R.A.F. commn. on retirement from the Army, and is permitted to retain his rank; July 28 (substituted for *Gazette*, July 27).

## Memoranda

Sec. Lieut. T. J. Q. O'Hara is transf'd. to Unemployed List (from S.O.); Sept. 16.

Hon. Lieut. F. G. Crosby relinquishes his hon. R.A.F. commn.; April 1, 1919.

London Gazette, September 21

## Flying Branch

Sec. Lieut. A. H. Hollis to be Lieut.; June 13, 1919.

*Pilot Officers to be Flying Officers.*—T. G. Brooke; Aug. 8, 1919 (since demobilised). W. Anderson; Oct. 1, 1919. D. C. McDonald; Feb. 12 (since demobilised).

Capt. H. J. Brewster (Lieut., Midd'x R.) relinquishes his temp. R.A.F. commn. on return to Army duty; Mar. 7, 1919 (substituted for *Gazette*, Mar. 21, 1919). Lieut. (Hon. Capt.) T. W. P. L. Chaloner relinquishes his R.A.F. commn. on appt. to the T.F., with permission to retain his rank of Capt. (*Gazette*, June 24, 1919, to stand). Sec. Lieut. G. R. B. Dixon relinquishes his R.A.F. commn. on appt. to the T.F., with permission to retain his rank (*Gazette*, July 1, 1919, to stand).

*Transferred to the Unemployed List.*—Lieut. R. V. Gove; April 2, 1919. Sec. Lieut. H. F. Taylor; April 21, 1919. Sec. Lieut. A. B. Morris; Sept. 2. Sec. Lieut. C. D. Heenan relinquishes his commn. on account of ill-health contracted on active service, with permission to retain his rank; Oct. 3. Sec. Lieut. F. E. A. MacDonnell relinquishes his R.A.F. commn.; Sept. 2 (*Gazette*, May 13, 1919, to stand).

The notification in *Gazette*, Nov. 4, 1919, concerning Sec. Lieut. L. C. W. Trend is cancelled.

## Administrative Branch

Pilot Officer T. Moorcroft to be Flying Officer; Dec. 8, 1919 (since demobilised).

Sec. Lieut. M. Jones relinquishes his R.A.F. commn. on ceasing to be employed; Aug. 9, 1918.

*Transferred to the Unemployed List.*—Lieut. J. B. Fitzgerald; June 12, 1919 (substituted for *Gazette*, April 16).

Lieut. J. G. Le Brun relinquishes his R.A.F. commn. on account of ill-health caused by wounds, and is permitted to retain his rank; July 4 (substituted for *Gazette*, July 27).

## Technical Branch

Pilot Officer A. H. Berry to be Flying Officer (Grade A); Oct. 1, 1919.

*Transferred to the Unemployed List.*—Lieut. R. Edge; Jan. 16, 1919. Sec. Lieut. (Hon. Lieut.) T. F. Tomlinson; April 24, 1919.

## Memoranda

Pilot Officer T. J. Q. O'Hara to be Flying Officer; Dec. 24, 1919. Hon. Wing Comdr. R. G. Millar relinquishes his temp. hon. R.A.F. commn. on ceasing to be employed; April 5, 1919. Hon. Sec. Lieut. F. A. Henslowe relinquishes his hon. R.A.F. commn.; Sept. 2. P.F.O. R. D. Saunders is granted an hon. commn. as Sec. Lieut. with effect from May 15, 1919.

Then follow the names of 12 Cadets who are granted hon. comms. as Sec. Lieuts.

London Gazette, September 24

## Seconding

Lieut. W. L. Payne, R.N., is granted a temp. commn. as Flying Officer (Hon. Flight Lieut.) on seconding to the R.A.F. for three years; Sept. 14.

## Flying Branch

Flying Officer H. L. Rough, D.F.C., is restored to the Active List; March 3 (substituted for *Gazette*, Sept. 17).

*The following relinquish their comms. on appointment to the T.F., and are permitted to retain their rank.*—Lieut. R. Locke (*Gazette*, Dec. 2, 1919, to stand); Lieut. G. E. W. Stevens, M.C. (*Gazette*, May 13, 1919, to stand); Sec. Lieut. C. A. Winch (*Gazette*, July 22, 1919, to stand).

*The following Lieuts. relinquish their comms. on ceasing to be employed.*—W. H. Nash; June 15, 1918. H. W. Minnish; Sept. 13.

*Transferred to Unemployed List.*—Sec. Lieut. (Hon. Lieut.) G. O. Wood; Jan. 26, 1919. Sec. Lieut. (Hon. Lieut.) J. A. Shepherd, M.C.; Feb. 5, 1919. Sec. Lieut. A. W. Johnston; March 4, 1919. Lieut. E. S. Flatman; March 5, 1919. Sec. Lieut. E. T. W. Lander; April 2, 1919. Sec. Lieut. S. W. J. Ward; May 9, 1919. Sec. Lieut. J. I. E. S. Wright; May 21, 1919. Lieut. R. P. Keely; June 28, 1919. Sec. Lieut. E. N. Strain; July 13, 1919. Lieut. P. H. Bell; July 12. Lieut. A. J. Allen; Sept. 14.

Notifications in *Gazette*, June 13, 1919, and June 15, concerning Sec. Lieut. R. C. Hill are cancelled.

## Administrative Branch

Capt. W. O. Thomas, M.C., relinquishes his R.A.F. commn., on appt. to the T.F., and is permitted to retain his rank (*Gazette*, April 4, 1919, to stand).

*Transferred to Unemployed List.*—Sec. Lieut. J. C. Wood; Feb. 20, 1919. Capt. R. Goudie; Feb. 25, 1919 (substituted for *Gazette*, April 1, 1919).

Lieut. J. N. Dillon; Aug. 28.



# MODEL AEROPLANES

F.J. Camm

All communications to be addressed to the Model Editor. A stamp should be enclosed for a postal reply.

## A Long-Distance Monoplane

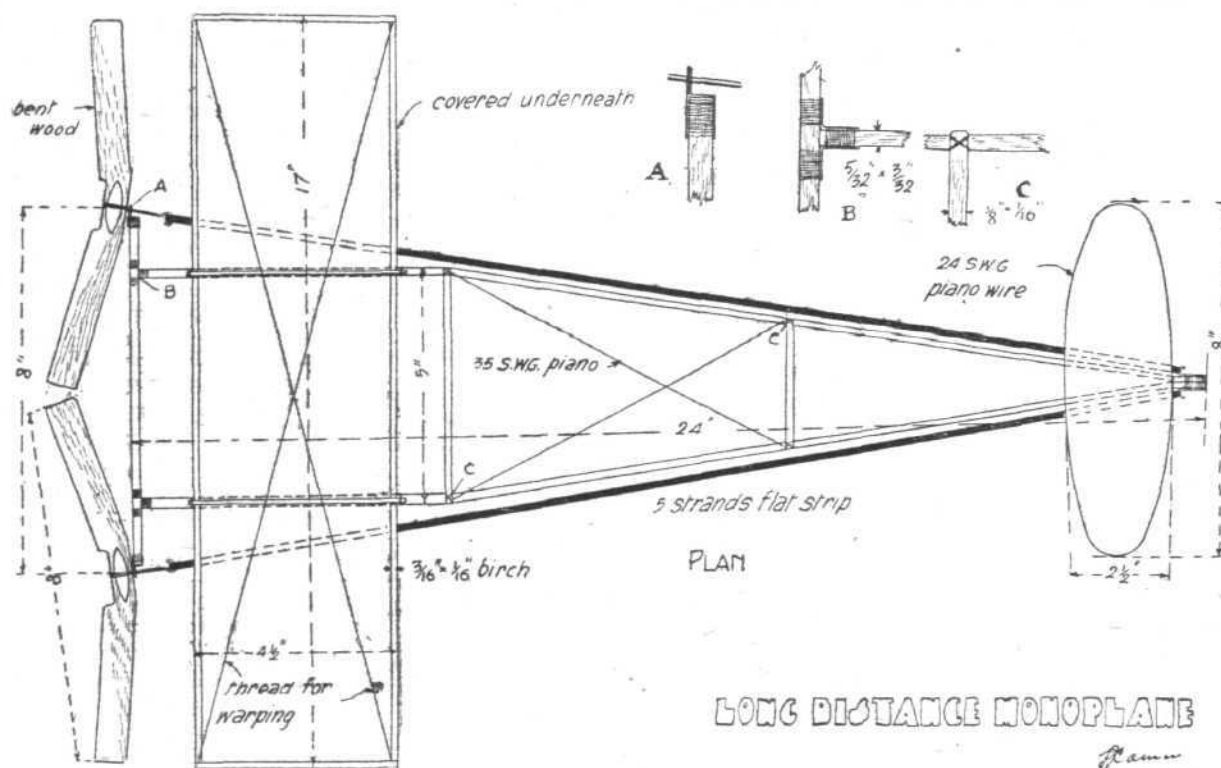
In view of the fact that many new readers are not quite competent to undertake the more elaborate designs given herein, nor to understand the relevant theory given in connection with them, it seems desirable to give some designs for rather simple machines which are easy to make and (more important) easy to fly. Accordingly, I now intend giving a series of drawings of well-known machines so that,

size half-plan drawing, and bend the two longitudinal members simultaneously.

(To be Continued)

## The O-1-P2-1 Type

THE O-1-P2-1 type shown herewith is somewhat unusual in model form, and does not seem to have been generally adopted. Such models, however, look exceedingly fine in the air, are wonderfully stable and capable of long duration,



LONG DISTANCE MONOPLANE

F. J. Camm

by means of making and flying them, readers just taking-up the making of aeroplane models may be enabled to understand the matter previously given relating to the theory, not only with regard to the machine as an entity, but also in connection with its components. The drawings this week show a Twining Monoplane, which I know will give satisfaction. It is also a suitable model for a beginner to commence with. Unlike the conventional A frame of which Messrs. Mann and Grimmer were the leading exponents, the longerons are bent from a point just forward of the main plane, which arrangement permits of easy adjustment to the wings in a fore and aft direction, and, I think, imparts a more pleasing general appearance. I think the dimensions and details A, B, and C render the construction simple. The two longerons are of spruce; the best method of ensuring their truth is to make a full-

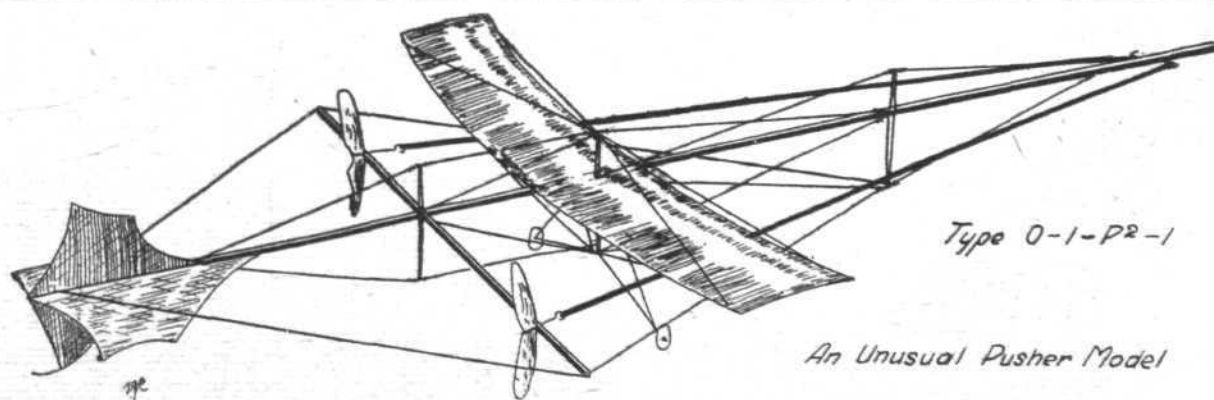
although tedious to tune up. The wing tips should have a negative angle in order that the best results may be obtained.

It would be interesting to hear from readers who have experimented with this type.

## Leytonstone and District Aero Club

It is gratifying to hear that a few of the pre-War members of this Club have got together and decided to take up their old hobby again.

Mr. Reg. A. Chilman, 14, Davies Lane, Leytonstone, is acting as Hon. Sec., and he will be glad to hear from any readers in the district round Leytonstone, Forest Gate and Walthamstow. During the past few weeks three of the members, Messrs. Bedford, Hensom and Wood have been doing some interesting flying on the Club's flying ground at Wanstead Flats, near the Woodford Road, mostly with models of the 1-1-O.P2 type.



An Unusual Pusher Model

## SIDEWINDS

THANKS to the promptitude with which the fire that broke out at Messrs. Martinsyde's works at Woking on Saturday was tackled, the damage done was not so extensive as it might have been, although it will run into some thousands of pounds. We are glad to learn that the output of the works, both in the aeroplane and motor-cycle departments, will not be interfered with in any way.

On September 11 a representative gathering of the Institute of Marine Engineers paid a visit to the engineering works of Messrs. Allen and Simmonds of Reading. The chief item of interest to the members of the Institute, and *raison d'être* of the visit, was the patent piston with gapless rings invented some years ago by Mr. Robert Allen, and since brought into prominence by its successful adaptation to engines of every type. The most recent outlet for the firm's energies is its incursion into the motor business. The garage now being built within a stone's throw of the station is designed to accommodate four hundred cars, and the equipment of the repair shop includes the most modern type of plant for crankshaft grinding and gear cutting. The principle of the "Allen" piston was shown to be applicable to every type of steam and internal-combustion engine, and figures were given to illustrate the proved economies in fuel, oil and engine upkeep resulting from the fitting of "Allen" pistons.

OWING to the rapid progress being made by Barimar, Ltd., the scientific welders, Mr. C. W. Brett (Managing Director) has found it necessary to appoint a Deputy Manager to assist him with his many responsibilities, occasioned by the opening of several large home and overseas branches. Mr. W. Ewen, who has been given the position, has had considerable and



Mr. W. Ewen

varied commercial experience, both in London and the North of England, and is thoroughly conversant with all modern business-methods in connection with managerial matters. He is a man of many parts, full of enthusiasm and initiative, and should prove a valuable acquisition both to Mr. Brett and Barimar, Ltd.

ON the occasions of the recent fine attempts to swim the Channel by Mrs. Willing and Mr. Sullivan, the pilot boats which accompanied the gallant swimmers ran throughout on "Shell" spirit and gave every satisfaction.

### The Catastrophe at Hayes

It is with the greatest regret that we have to record the accident at Hayes, Middlesex, on the afternoon of Saturday, September 25. It appears that the Centaur twin-engined machine of the Central Aircraft Co., ascended from the firm's flying ground at Northolt for a trial flight, and had not been in the air more than five minutes when, from some unexplained cause, it appeared to get out of control, and fell over 1,000 ft. into a field at Shavell Lane, Hayes. There were six persons on board, and Capt. F. P. Castleman, the pilot, Miss Imelda Trafford, Mrs. Wilkinson, her daughter Gladys, and ex-Sergeant Rowlands, who were

passengers, were killed outright, while Helen Rowlands, the 14-year-old daughter of Sergeant Rowlands, was so seriously injured that she succumbed on Monday evening.

Miss Trafford had been a pupil at the company's school, and had the distinction of being the first lady to qualify for the Air Ministry "A" pilot's certificate, Mrs. Wilkinson was the wife of the caterer at the aerodrome, and Sergeant Rowlands was the caretaker at the aerodrome.

At the inquest on Tuesday, the jury returned a verdict of "Accidental Death," and found that nobody was to blame. The coroner expressed the opinion that everything possible had been done by the company.

## PUBLICATIONS RECEIVED

Report No. 85. *Moisture Resistant Finishes for Airplane Woods.* National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Report No. 88. *Pressure Drop in Radiator Air Tubes.* National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Technical Note No. 13. *Soaring Flight in Guinea.* By P. Idrac. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Technical Note No. 14. *Increase in Maximum Pressures Produced by Pre-Ignition in Internal Combustion Engines.* By S. W. Sparrow. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

## AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motors. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

### APPLIED FOR IN 1916

Published September 30, 1920

8,372. A. B. HOUGHTON. Timing of bomb release from aircraft. (150,358.)

### APPLIED FOR IN 1918

Published September 30, 1920

913. F. G. J. BUTLER. Rotary I.C. engines. (150,363.)

5,664. P. B. VAN LEGGEL. Helicopters. (122,164.)

### APPLIED FOR IN 1919

Published September 30, 1920

8,346. H. SCOTT-PAINE and SUPERMARINE AVIATION WORKS. Tail planes, etc. (150,374.)

13,594 and 13,595. SIR W. G. ARMSTRONG-WHITWORTH AND CO., and L. J. LE MESURIER. Launching apparatus for seaplanes. (150,410 and 150,411.)

13,680. J. EVANS. Rotary engines. (150,416.)

14,767. R. F. POWER. Aerial observation from aircraft in flight. (150,453.)

18,232. F. SAGE AND CO., and C. W. TINSON. Launching and alighting gear. (150,499.)

19,808. A. V. ROE. Joint-plates for aircraft. (150,517.)

### APPLIED FOR IN 1920

Published September 30, 1920

9,383. SOC. DES MOTEURS SALMON. Valve springs. (145,398.)

18,131. DAIMLER MOTOREN GES. Means for testing aero-engines. (145,771.)

If you require anything pertaining to aviation, study "FLIGHT's" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xxi and xxii).

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